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ORIGINAL ARTICLES.

GEORGE BODINGTON:

THE PIONEER OF THE SANATORIUM TREATMENT OF PULMONARY TUBERCULOSIS.

By RICHARD J. CYRIAX,
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Among the very first to treat pulmonary tuberculosis on sanatorium lines was, as is well known, the late Dr. George Bodington. But although many authors mention him by name, few furnish details of his life and work, and the writer therefore ventures to hope that the present account may be of some interest to the readers of this journal.

The Biography of Dr. Bodington.[1]

Dr. George Bodington was descended from a very old Warwickshire family—the Bodingtons of Cubbington, near Leamington Spa. He was the seventh son of Joseph Bodington, Esquire, and the latter's wife, Mary, *née* Cattel; was born at Kenilworth Chase in 1799, and was educated at Magdalen College School, Oxford. At the age of seventeen he was apprenticed to a surgeon at Atherstone, Warwickshire, and subsequently to another surgeon in London. After completing his studies at St. Bartholomew's Hospital, he obtained the

[1] The biographical notes of this article have been compiled, except where otherwise stated, from the following sources: (*a*) "Pedigree of the Family of Bodington," W. F. Carter, 1895. (*b*) Obituary notices in the *British Medical Journal*, London, vol. i., 1882, pp. 252, 253, 362; the *Lancet*, London, vol. i., 1882, p. 417; the *Medical Times and Gazette*, London, vol. i., 1882, p. 241; the *Birmingham Medical Review*, London and Birmingham, vol. ii., 1882, pp. 190, 191. These notices are practically identical. Those which appeared in the *Lancet* and the *British Medical Journal* have been reprinted (see later).

Licence of the Society of Apothecaries on June 30, 1825.[1] He also took the M.D. degree of the University of Erlangen, and in 1859 the Licence of the Royal College of Physicians of Edinburgh. After a short period of practice in Birmingham, he established himself as a general practitioner in the neighbouring village of Gravelly Hill.[2] At about this time he married Miss Ann Fowler, born 1799, younger daughter of Richard Fowler, Esquire, of Gravelly Hill House, Erdington. They had several children.

During the year 1836 Dr. Bodington became the resident proprietor of a private asylum, which had previously belonged to a Dr. Terry and a Dr. Horton. It was situated at Driffold House, Sutton Coldfield. A few years later he rented the White House, Maney, for the purpose of providing accommodation for resident patients who suffered from phthisis, a disease which he had been treating on open-air principles for a few years. As his method of treatment and the circumstances surrounding his use of Driffold House and the White House are fully described below, it will suffice to state here that he terminated his tenancy of the latter premises a few years later. In 1843 he decided to devote himself entirely to his insane patients at Driffold House, and consequently abandoned general practice. He continued the active supervision of the asylum until his retirement.

Dr. Bodington was a member of the British Medical Association for many years, and the author (apart from his monograph on phthisis) of numerous communications to the medical journals. His earlier contributions, written when he was engaged in general practice, dealt with various topics; his later ones principally with questions relating to insanity and the treatment of cholera,[3] in which he was much interested.[4] It would be beyond the scope of this article to consider these communications in detail, but it is necessary to state that their perusal

[1] "List of Persons who have obtained Certificates of their Fitness and Qualification to Practise as Apothecaries," etc., London, 1840. Issued by the Society of Apothecaries of London. This list gives Kenilworth as Dr. Bodington's home address.

[2] The writer has not been able to ascertain exactly where Dr. Bodington resided at Gravelly Hill. No medical directories were issued, and no local directories, giving his exact address, appear to have been published during the time that he was living there.

[3] (*a*) Three letters concerning the treatment of dislocations of the shoulder-joint, the arrest of vomiting by creosote, and scarlet fever. The *Lancet*, London, vol. ii. for 1832-33, p. 155; vol. i. for 1835-36, pp. 694, 695; vol. i. for 1839-40, pp. 590-592 respectively. (*b*) "The Therapeutical Inquiry," "Lunacy Certificates: Hall *versus* Semple," "The Plea of Insanity," "The Eliminative Treatment of Cholera," "Cholera Treatment," "The Cholera Question," "On the Theory of Cholera and the Treatment," all in the *British Medical Journal*, London, vol. ii. for 1862, p. 629; *ibid.*, pp. 674, 675; vol. i. for 1864, pp. 300, 301; vol. i. for 1866, p. 58; *ibid.*, p. 158; *ibid.*, p. 214; vol. ii. for 1866, pp. 368, 369 respectively. Some additional contributions from Dr. Bodington's pen are mentioned in other footnotes, but there may be many more which the writer has failed to trace.

[4] The obituaries in the medical journals state that Dr. Bodington was the author of "A Letter on a Case of Asiatic Cholera addressed to the President and Council of the Central Board of Health," published in pamphlet form, 1831. This letter

cannot fail to impress even the most critical readers with Dr. Bodington's fearlessness, sincerity, and, above all, genuine sympathy with the sufferings both of humanity and of dumb animals.[1] Nor did his interests end here. He was a keen student of politics and constitutional questions, and the author of numerous letters[2] on these subjects to the newspaper press. He also engaged in public work. He was a warden of the borough for two years (1852-1854), a magistrate, and a member of the Corporation, in which capacity he was a staunch defender of the popular cause.[3]

DRIFFOLD HOUSE, NOW PART OF THE DRIFFOLD (1924).

Driffold House, during Dr. Bodington's occupation, consisted of the central buildings of the present mansion, their front aspect being depicted above. The more modern parts of the Driffold are not shown on the photograph.

In 1868, after a long professional career, he retired from practice, and vested the medical superintendentship of the asylum in his son, Dr. G. F. Bodington. He then moved to Rocksall, situated close

appears to be exceedingly rare; the writer has failed to find a copy. It is said to have been a vigorous protest against the use of bleeding and calomel.

[1] "Chloroform successfully administered to a Mare previously to the Operation of Firing," the *Lancet*, London, vol. ii. for 1850, pp. 389, 390.

[2] Some of these were published in collected form: (i.) "Letters," London, no date (1849). (ii.) "On Household Suffrage, Triennial Parliaments, and Reform of the House of Commons," London, 1867.

[3] Obituary notice, the *Sutton Coldfield and Erdington News*, Birmingham and Sutton Coldfield, February 11, 1882. This appears to have been the only obituary notice published in the local press; the Birmingham newspapers reported merely the fact of Dr. Bodington's death.

to Driffold House, and devoted himself mainly to public services. On February 25, 1874, he suffered the loss of his wife, and in May, 1881, he resigned his seat upon the Corporation. He died at Rocksall,[1] after ailing for some months, on Sunday, February 5, 1882, in his eighty-third year, and was interred in the graveyard which surrounds the Parish Church at Sutton Coldfield.

Dr. George Bodington's Treatment of Pulmonary Tuberculosis.

It is not definitely known when Dr. Bodington first treated phthisis on open-air principles, but his writings afford conclusive evidence that he was doing so in 1833. His treatise on the subject was completed in January, 1840, and was published shortly afterwards, with the title "An Essay on the Treatment and Cure of Pulmonary Consumption on Principles Natural, Rational, and Successful." It was admittedly a short essay, and seems to have been his first and last contribution to the literature on tuberculosis. The original edition is very rare,[2] but a copy is preserved in the British Museum, and the work has twice been reprinted.[3] It included accounts of six cases treated by Dr. Bodington. One had terminated fatally, as he frankly acknowledged; the others were either greatly improved or apparently cured when his essay was written. In this connection it is interesting to know that one of these patients lived for many years; she died in 1902 at the advanced age of eighty-two.[4]

The theoretical part of the book is its least satisfactory feature, and a brief reference to it will suffice. Nothing was known of the real ætiology of phthisis, and Dr. Bodington was in this respect as much in the dark as his contemporaries. He himself believed that the cause was "nervous irritation, or altered action, or weakened power, in the substance of the lungs from the presence of tuberculous matter deposited there as a foreign body." The historical importance of the treatise thus lies entirely in the practical part, and the principal features of the latter are shortly indicated here for the information of those who lack access to the original. The sequence adopted by Dr. Bodington has not, however, been followed, purely for the sake of convenience of description.

[1] The house is now called Inveresk, and is occupied by the Sutton Coldfield College.

[2] Sir William Osler, "George Bodington," the *Canadian Medical Association Journal*, Toronto, new series, vol. ii., 1912, pp. 526, 527.

[3] (i.) "Selected Essays and Monographs," New Sydenham Society, vol. clxxiii., London, 1901, pp. 122-153. With reprint of the obituary notice published in the *British Medical Journal*, 1882 (see above). (ii.) With the same title as the original, Lichfield and London, 1906. Preface by Dr. A. E. Bodington. This edition includes the obituary notice published in the *Lancet*, 1882 (see above), and a portrait of Dr. George Bodington, with facsimile of his signature.

[4] Reprint of Dr. George Bodington's "Essay," 1906 edition, footnote, pp. 30, 31.

Agricultural labourers, farmers, shepherds, and ploughmen suffer relatively little from phthisis; its principal victims are town dwellers and those who live indoors. In order to cure the latter it is requisite that their habits should be made to conform to those of the former.

The practice of confining consumptives in a close room and giving tartar emetic in excessive doses is to be condemned. Shutting them in a room merely converts a slow or moderate case into a galloping one. Ipecacuanha, carbonate of soda, potassium nitrate, and the inhalation of various gases are all equally useless. "The only gas fit for the lungs is the pure atmosphere freely administered without fear; its

MANEY HOUSE, SHOWING THE WHITE HOUSE (1924).

The three-storied building shown above consists in part of the original White House, the back of which faces the spectator. This photograph was taken from the grounds behind Maney House.

privation is the most constant and frequent cause of the progress of the disease. To live in and breathe freely the open air, without being deterred by the wind or weather, is one important and essential remedy in arresting its progress—one about which there appears to have generally prevailed a groundless alarm lest the consumptive patient should take cold. Thus one of the essential measures necessary for the cure of this fatal disease is neglected, from the fear of suffering another disease of trifling import."

The air in the early morning is the best, and should be the foundation of treatment. The cooler the air, the greater the benefit; sharp

frosty days are the most favourable of all. If the patient starts coughing on leaving the house, this proves merely that the air in the room is too warm, not that the air outside is too cold. Warm close rooms must be avoided; patients should keep away from fires, and maintain the necessary degree of bodily warmth by means of sufficient clothing. Windows must be kept wide open. Nothing is to be gained by a sojourn at the seaside; the inland air is best.

The next important indication is a nutritious and moderately stimulating diet. A glass of good sherry or madeira, with an egg, should be taken in the morning, and another glass of wine after dinner. The latter meal should include fresh meat; supper may consist of sago, boiled milk, or other nourishing food.

Riding or carriage exercise must be taken for several hours a day, as also walking for as great a distance as the patient's strength permits, the length of the walk being gradually increased. Inclement weather must not be permitted to interfere with daily walking exercise, riding, or driving.

As regards medicinal treatment, moderate doses of sedatives (such as aconite, hyoscyamus, or morphine) may be administered during the day, with a full dose at bedtime to prevent cough and to promote sleep.

One patient treated on these lines pursued the following routine: He took a glass of new milk before breakfast, rose at 6 a.m., and walked in the garden. Breakfast consisted of tea and toast, and was followed by riding. He took milk and toast for lunch, and fresh meat and bread for dinner. Three glasses of wine were given during the day—at 11 a.m., 2 p.m, and 7 p.m., respectively. The afternoon was devoted to riding or walking. He retired to bed at 8 p.m., and an anodyne morphine draught was administered at night.

The procedures described above must be used with attention, regularity, assiduity, and patience. A well-ventilated house in the country is to be preferred. It should be situated on an eminence in a dry neighbourhood where the air is dry and free from fog. The most suitable soil is a light loam, sand, or gravel.

Manifest advantages would arise if some medical men undertook the treatment of phthisis as a distinct branch of medicine, and were entrusted with the patients of their colleagues in cities. These practitioners should have country houses in proper situations, where patients could be under their immediate supervision. For the poor, properly appointed hospitals ought to be provided near large towns, and be equipped with facilities for riding and carriage exercise, and also for farm work for convalescent patients. An institution of this kind for the sole use of the Sheffield grinders is an urgent necessity. It should include arrangements for the employment of cured and convalescent cases, who must on no account be permitted to return to their former occupation.

"I have learned by experience that the surest way in which a successful treatment can be arrived at by the medical man is by the reception under his own roof of the consumptive patient; at the same time, his house should be in the country, and in a situation airy and dry; he should have every means about him for the proper exercise of the patient—in a carriage, on horseback, or a donkey, according to the ability and taste of the invalid; a swing-boat is a good exercise, and one which I have employed with much advantage. The bedroom should be cool and airy, and properly ventilated; everything relating to the patient's health should be strictly watched and regulated by the practitioner; above all, in the medical treatment, there should be no bias in the mind arising out of the theory prevalent in the schools, and in medical practice, and termed 'phlogiston,' giving rise to a treatment called antiphlogistic."

The method described above was systematically carried out by Dr. Bodington's patients. It speaks for itself, and requires no comment, except a few words concerning the respects in which it was original. As limits of space prevent detailed description of the relative importance attached by physicians at different times to fresh air, food, exercise, and sedatives in the treatment of phthisis, the following account has been limited as far as is possible to the opinions which were actually entertained when Dr. Bodington's essay was published.

Many writers admitted that impure air was a potent factor in the causation of tuberculosis,[1] and at least one believed it to be the essential cause.[2] Change of air, especially from the atmosphere of a town to that of the country, was almost universally recommended both as a remedy in established phthisis and as a prophylactic agent, but very few authors laid any real stress upon the curative properties of fresh air itself. The first to advise the latter for its own sake, and not in the guise of "change of air" or climatic treatment, appear to have been W. Black and W. Buchan (1729-1805). Black believed pure air to be at least equal to diet or medicine, and suggested the erection of two or three hospitals for consumptives a few miles from London.[3] Buchan advised pure and fresh air in the country, proper exercise, and a milk and vegetable diet.[4] Other indications are not lacking[5] that the great importance of fresh air in the treatment of phthisis was in slow process

[1] J. Clark, "A Treatise on Pulmonary Consumption," London, 1835, pp. 231-233.

[2] A. C. Baudelocque, "Études sur les causes, la nature et le traitement de la maladie scrophuleuse," Paris, 1834, pp. 123 *et seq.*

[3] "Observations, Medical and Political, on the Smallpox," second edition, London, 1781. This suggestion did not appear in the first edition, London, 1781.

[4] "Domestic Medicine," London, 1794, pp. 177-182. The first edition was issued in 1769, but the writer has had access only to the edition of 1794, and does not know if the same advice was given in the earlier editions.

[5] (i.) B. Rush, "Free Thoughts upon the Cause and Cure of the Pulmonary Consumption": in "Medical Inquiries and Observations," third edition, Philadelphia

of recognition during the latter part of the eighteenth and beginning of the nineteenth centuries, but it was beyond question neither fully nor universally recognized when Dr. Bodington's essay was published. Even F. H. Ramadge (1793-1867), who utilized breathing exercises in phthisis, laid no stress upon fresh air as such.[1] On the other hand, residence in a mild climate, preferably at the seaside, was advised by many, including R. T. H. Laennec (1781-1826.)[2]

There was relatively little difference of opinion regarding the most suitable diet. Almost all the authorities ordered a "mild diet"; meat and wine were very generally condemned. Thomas Young (1773-1829), who was physician to St. George's Hospital, and is famous as the founder of physiological optics, stated that "a few theorists only have declaimed in favour of supporting the diminished strength by the most nutritious and invigorating food, such as animal substances in abundance, with rich wines."[3] Again, Dr. James Clark (1788-1870), who became Physician in Ordinary to Queen Victoria, and was honoured with a baronetcy in 1837, declared in 1835 that only very few patients were "likely to be cured by the stimulating plan of treatment—by the beefsteak-and-porter system."[4] Milk, eggs, and farinaceous foods constituted the usual diet, and Dr. Bodington thus ventured upon a radical departure from standard practice, even if he was not the first to do so.

Exercise, both active and passive, was prescribed during the period of classical antiquity,[5] and riding on horseback and carriage exercise were widely employed during the eighteenth century, chiefly owing to the example set by Thomas Sydenham (1624-1689).[6] He believed riding to be an absolute specific, and carriage exercise highly beneficial, in all cases of phthisis, no matter how advanced; but both he and his followers attributed the beneficial effects of these exercises principally to the actual motion of the horse or carriage, and not to what was probably the real factor—exposure to fresh air.[7] The same opinion was shared by those who advocated swinging[8] or the use of

and London, 1794, pp. 158-172. (ii.) J. Parrish, "Observations on Pulmonary Consumption," the *North American Medical and Surgical Journal*, Philadelphia, vol. viii., 1829, pp. 274-285; vol. ix., 1830, pp. 145-154.

1 "Consumption Curable," London, 1834.

2 "A Treatise on the Diseases of the Chest and on Mediate Auscultation," second edition, translated by J. Forbes, 1827, pp. 367 *et seq.*

3 "A Practical and Historical Treatise on Consumptive Disease," London, 1815, p. 78.

4 *Op. cit.*, 1835, p. 397.

5 Celsus, "De Medicina," lib. iii., c. xxii.

6 (i.) "Dissertatio Epistolaris ad Gulielmum Cole, M.D.," etc., London, 1682, pp. 166, 167 (with additional matter in the edition of 1685). (ii.) "Processus Integri," London, fifth edition, 1726, p. 98 (first definite edition, London, 1693).

7 "The History of Horse-riding in the Treatment of Pulmonary Tuberculosis," R. J. Cyriax, the *British Journal of Tuberculosis*, vol. xvi., London, 1922, pp. 78-84.

8 J. C. Smythe, "An Account of the Effects of Swinging employed as a Remedy in the Pulmonary Consumption and Hectic Fever," London, 1787.

machinery as a substitute for a real horse.[1] Riding, driving, and other forms of exercise were still in use at the beginning of the last century, but they had long since ceased to be regarded as the main indication in phthisis, and were employed only as auxiliaries to other treatment. Dr. Bodington broke no new ground in prescribing them, but his avowed object was very different to that of Sydenham and of those who followed in the latter's footsteps—it was to expose his patients to fresh air, not merely to subject them to the jolting of a horse or vehicle. His aim in administering sedatives was to combat the nervous irritation which he believed to be the cause of the disease. They were, however, frequently ordered by others, although not as a corollary to this theory, which seems to have been original.

It is now requisite to describe how pulmonary tuberculosis was usually treated by Dr. Bodington's contemporaries, not only in order to complete these comparisons, but also to show the full significance of his remarks, many of which would otherwise be obscure to modern readers.

A mild climate was regarded as beneficial, and this seems to have led some authorities to believe that warmth was advantageous when produced artificially. Patients were therefore confined to a room which was provided with double doors and windows, and kept constantly heated by a stove to a temperature of about 65°. This method of treatment owed its inception to T. Beddoes (1760-1808).[2] It did not command universal approval, but was strongly recommended by Young,[3] and appears to have continued in use until the third decade of the last century.

In order to "prevent the deposition, or at least the retention, of tuberculous matter in the bronchial ramifications and air cells," emetics were given twice a week, their action being assisted with small doses of tepid chamomile tea. They were prescribed far more often in urgent cases. Alkalies and ipecacuanha were prescribed during the intervals in order to increase the bronchial secretion.[4] Small frequently repeated doses of tartar emetic, sufficient to cause nausea and diaphoresis, but not actual vomiting, were credited by some physicians with the same therapeutic effects as emetics; patients treated on these lines at Haslar Hospital received a sixth of a grain every four hours.[5]

"The congestion or inflammation, complicated with, and often dependent on, the presence of tubercles," was combated with bleeding, cupping, and leeching. Pitch-plasters, croton oil, the actual cautery,

[1] S. T. Quelmalz, "Novum Sanitatis Præsidium," Leipzig, 1735.
[2] "Observations on the Medical and Domestic Management of the Consumptive," London, 1801, with illustration of the stove opp. p. 74.
[3] *Op. cit.*, 1815, p. 81.
[4] J. Clark, *op. cit.*, 1835, pp. 341-354.
[5] F. Cook, "A Practical Treatise on Pulmonary Consumption," London, 1842, p. 91.

blistering fluid, tartar emetic ointment, issues and setons, and other counter-irritants were employed when considered necessary. Furthermore, the actual site of the disease was attacked directly by means of inhalations of various fumes and gases. Tar vapour, hydrogen, oxygen, carbon dioxide, and nitrous oxide had all been tried and had been abandoned, but diluted chlorine still enjoyed considerable popularity.[1] One writer, who was not a medical practitioner, but a man of science, recommended not only chlorine, but also nitrogen tetroxide, prepared by exposing fuming nitric acid to the air.[2]

A whole host of drugs was credited by different authorities with the power of controlling the course of the disease. In accordance, therefore, with the particular belief entertained by the practitioner, patients were dosed with one or other of the following: sulphur, digitalis, dilute sulphuric acid, saline purgatives, calomel and other mercurials, squill, calcium chloride, prussic acid, uva ursi, opium, conium, Bristol waters, cinchona bark, iodine, potassium nitrate, carbonate of soda, antimony, iron, etc.[3] Residence in a warm climate, baths of various kinds, a milk and vegetable diet, exercise (preferably on horseback), and sailing completed the treatment. Residence in a cow-house found only a few advocates in England.[4]

The reader must be referred to the original literature for precise particulars of the manner in which these remedies were employed, but enough has been said for the present purpose. It is abundantly clear from the foregoing that Dr. Bodington's treatment of phthisis, although in many respects a combination of previous tendencies, differed radically from that of his contemporaries. It is also clear that it omitted so many procedures which were customary, and included so many which were either new or contrary to authoritative opinion, that it may justifiably be termed original. There is no need to point out that it comprised almost all the real essentials of sanatorium treatment as practised to-day.

Further confirmation of Dr. Bodington's originality is afforded by the criticisms expressed by the reviewers of his book. If his method had differed from established practice only in a few minor respects, and had been fairly representative of current doctrine, it would not have called forth the contemptuous abuse which was actually bestowed upon it by some of the reviewers. Only one notice was at all favourable, but it virtually attempted to demolish one of Dr. Bodington's principal

[1] J. Clark, *op. cit.*, 1835, pp. 336-341, 360-373; A. B. Maddock, "Pulmonary Consumption," sixth edition, London, 1858 (first edition, 1844).

[2] John Murray, "A Treatise on Pulmonary Consumption," London, second edition, 1831, p. 157.

[3] This list has been compiled from the monographs enumerated in the footnotes, more especially from those by Thomas Young and James Clark.

[4] F. Cook, *op. cit.*, 1842, pp. 64, 65; T. Beddoes, *op. cit.*, described several cases treated in this manner.

contentions by proclaiming that phthisis could not be cured. "We think with Mr. Bodington," it concluded, "that the plan he adopts is both 'natural and rational'; we think his observations sound, that the situation and circumstances he describes the best possible for the treatment of pulmonary diseases, and that the cases he quotes in illustration tell strongly in favour of his mode of treatment. But here we stop. Pulmonary disease may be warded off, its ravages may be stayed, the health of the patient improved, and his life prolonged, but our present pathological knowledge declares, in a tone not to be denied, that *true phthisis is incurable.*"[1] This review, however, was the exception, for the others were uniformly unfavourable. One spoke of Dr. Bodington's "very crude ideas and unsupported assertions";[2] another implied that he was ignorant of the previous literature upon phthisis;[3] yet another roundly declared that his book betrayed an utter ignorance of pathology and therapeutics.[4]

These criticisms, no matter whether they actually moulded professional opinion or merely echoed it, appear to have sounded the death-knell of the open-air treatment of phthisis as far as Dr. Bodington was concerned. Gravelly Hill, Erdington, and Sutton Coldfield were villages eighty years ago,[5] not the populous residential centres which they are to-day, and the success of his institution must consequently have been in very great measure dependent upon the personal recommendation of practitioners in Birmingham and other large towns. Exactly what his colleagues thought of him cannot now be ascertained, but they seem to have agreed with the reviewers; and it is probably very near the truth to state that their kindest criticism of him was that he was completely deceived, even if sincere and well-intentioned. At all events, neither support nor encouragement of any kind were forthcoming from the profession, and so his institution for open-air treatment was closed.

There is no need to dwell upon this tragedy. It is, however, some consolation to know that he lived long enough to see his colleagues gradually recognize and finally acknowledge the supreme importance of fresh air in the treatment of phthisis. Sixteen years after the publication of his book, the latter was very favourably noticed by a writer in the *Journal of Public Health*,[6] and although modern sanatorium treatment came after his death, its foundations (apart from those which he

[1] The *Medical Times*, London, vol. ii., 1840, pp. 274, 275; italics in original.
[2] The *Lancet*, London, vol. ii. for 1839-40, pp, 575, 576.
[3] The *London Medical Gazette*, London, vol. ii. for 1839-40, p. 725.
[4] The *British and Foreign Medical Review*, vol. x., London, 1840, p. 549.
[5] The population of Sutton Coldfield was 4,282 in 1841.
[6] The *Journal of Public Health and Sanitary Review*, London, vol. ii., 1856, pp. 338-342. The obituary notices of Dr. George Bodington give 1857 as the year of publication of this review, probably owing to a printer's error; the correct date is 1856. This review is anonymous, but is supposed to have been written by Dr. (afterwards Sir) Benjamin Ward Richardson.

himself had erected) were built during his lifetime. Needless to add, his work was accorded the fullest recognition by the medical journals at the time of his decease.

His own memorable words, written to his son, were prophetic: "I often think that, when I am dead and buried, perhaps the profession will be more disposed to do me some justice than whilst I live."[1]

Driffold House and the White House.

Dr. Bodington acquired Driffold House in 1836. No description of it at this particular time seems to be in existence, but an official return made twenty-two years later stated that the property included sixteen acres of land, part being a pleasure garden and part pasture, and that a farm of eighty-five acres, also in Dr. Bodington's possession, was situated a short distance away.[2] As he alluded in his essay on phthisis both to a garden and a farm-house near by, the amount of land attached to Driffold House in 1836 was probably the same as when this return was made. The accommodation in 1862 consisted of the house itself and some outbuildings,[3] and the same provision appears to have existed from the beginning of his occupation.

The house was a private asylum when he became its proprietor,[4] but it served a double function for the ensuing three or four years. A letter which he published in the *Lancet* in 1841 contains notes on several insane patients who had been admitted from the year 1836 onwards,[5] and his essay mentions that cases of phthisis were placed under his roof in November, 1836, and February, 1837. Not only insane patients, but also a few consumptives, must therefore have been received at Driffold House during the first few years of his tenancy.

This arrangement seems to have proved unsatisfactory. At all events, Dr. Bodington found it desirable to provide other accommodation for his tuberculous cases, and therefore rented the White House, Maney. It is noteworthy that the latter was intended for the reception of early cases of phthisis, or, as he expressed it, patients "afflicted or threatened with the first symptoms." Exactly when he took this house is not known to the writer, but there is no doubt that it was ready for patients, if not in their actual occupation, when he completed the preface to his essay during January, 1840. He stated in this

[1] Preface, p. xii, of the 1906 edition of Dr. George Bodington's essay on pulmonary tuberculosis.

[2] Parliamentary Paper, "Lunatic Asylums: Return to Two Addresses of the Honourable the House of Commons," 1858.

[3] "Sixteenth Report of the Commissioners in Lunacy," London, 1862; article, "Driffold House."

[4] Rev. W. K. R. Bedford, "History of Sutton Coldfield," 1879, p. 55.

[5] "Defence of Private Lunatic Asylums and Narrow Society for Insane Patients," the *Lancet*, London, vol. ii. for 1840-41, pp. 873-875.

preface that he had taken a suitable house, close to his own, for the purpose in question ; that this house offered "systematic arrangements with regard to exercise, diet, and general treatment, with the watchfulness daily—nay, almost hourly—over the patient of a medical superintendent." When the White House had been opened, he seems to have utilized the whole of Driffold House as an asylum, with, of course, the exception of his own apartments. He was licensed for the reception of twenty insane patients.[1]

The White House thus enjoys the distinction of having been the first establishment which was devoted exclusively to the open-air treatment of phthisis. It was, to use the modern expression, the premier "sanatorium," as was first pointed out by Dr. J. Comrie.[2] He derived his information regarding the White House from the late Miss Ellen Bodington, a daughter of Dr. George Bodington, and the writer is indebted to Dr. Comrie for most kindly sending him and permitting him to publish the following extract from her letter : "It may interest you to know that my father lived at Driffold House from 1836 to 1868, and that during part of that period he rented the White House at Maney . . . where he received consumptive patients for his special treatment, and that was practically the first sanatorium for his method, of which he was undoubtedly the pioneer."

But although the White House was the earliest institution for the treatment of phthisis on sanatorium lines, Driffold House received Dr. Bodington's first resident patients, was the real home of his method, and the parent of the White House. Indeed, the only essential difference between the two institutions lay in the fact that one was used solely for the purpose in question, the other one but partially. Both therefore occupy a position which may fairly be termed unique in the history of the treatment of pulmonary tuberculosis.

Dr. Bodington's occupation of the White House appears to have lasted only a few years—probably three or four. He is said to have decided in 1843 to devote himself entirely to Driffold House Asylum,[3] so must at that time have already closed his other institution.[4] How many patients he received at the White House is not recorded, but that he did receive some is rendered certain by the extract, quoted in a previous paragraph, from Miss Bodington's letter to Dr. Comrie. The house became a school for girls after Dr. Bodington vacated it ; if not immediately, then a few years later. A gentleman now residing at Sutton Coldfield has from personal recollection informed the writer

[1] Reports of the Commissioners in Lunacy.
[2] "Early Knowledge regarding Phthisis," the *Edinburgh Medical Journal*, Edinburgh, July, 1910.
[3] Obituary notices in the medical journals.
[4] The *Post Office Directory* for Birmingham, Warwickshire, etc. (W. Kelly and Co., London, 1845), gives Dr. Bodington's address as Driffold House only.

that it was a school in 1853. As Driffold House remained an asylum,[1] and Dr. Bodington made no attempt to re-establish an institution for open-air treatment, his work as regards tuberculosis cannot have continued for more than approximately ten years.

The commonly accepted statement that he converted his institution for the treatment of phthisis into an asylum appears to require slight qualification before it can be accepted as strictly accurate. There is no evidence that insane patients were ever received at the White House, and as regards Driffold House, the conversion was only partial. The latter was an asylum before he acquired it.

Both Driffold House and the White House still exist. Brief descriptions and photographs of them are appended, the present owners, Lieut.-Colonel C. F. Fiddian-Green and John Collyer, Esquire, respectively, having most kindly allowed the writer not only to see their residences, but to publish the accompanying photographs.

Driffold House, now part of The Driffold, stands upon an eminence on the south-west side of Sutton Coldfield. The back of the house commands magnificent views over Sutton Park, the landscape in this direction having retained its rural character. The house has been greatly enlarged since Dr. Bodington's time, but the parts which formed Driffold House can still be identified. The latter consisted of the central portions of the present mansion (their front aspect is shown on the photograph) and some adjacent buildings behind; these included the kitchen. Numerous alterations and improvements have been effected in the interior, but the kitchen and some of the bedrooms have not been materially changed except as regards decorations.

Some two-storied buildings are situated near the house. They overlook what is now a road, but was formerly a bridle-path. The original stables, although greatly changed, are still in existence; they doubtless accommodated the horses and carriages of which the tuberculous patients enjoyed the daily use.

The grounds have been altered to such an extent that their appearance is very different now to what it must have been eighty years ago. But the original garden, in which the patients took exercise, has been retained. It is situated close to the house, and is separated from the front lawn by a yew hedge of considerable age. The land at the back of the house, beyond a lawn, slopes downwards. The greater part of it was under grass during Dr. Bodington's tenancy, and was virtually a meadow, but only very little land of this character now remains to recall the past. Most of it has been converted by the present owner into pleasure gardens, ornamental terraces, and tennis-courts, and extensive levelling operations have also been undertaken.

The area of land in Dr. Bodington's possession was larger than

[1] Reports of the Commissioners in Lunacy.

that which is attached to the house now. Part of this additional land undoubtedly lay between the present grounds and Wyndley Pool; the remainder, including the farm, was probably situated in the same direction.

The White House is now part of Maney House, which is situated a short distance from Driffold House, on the road between Sutton Coldfield and Birmingham. The present house is at least three, if not four, times larger than the original White House. The entire front portion has been added since the time of Dr. Bodington, and a new wing has also been erected. In spite, however, of these additions and a number of other alterations, the general features of the White House can still be deduced with a fair degree of accuracy.

It seems originally to have been a farm-house of the high, but relatively narrow, three-storied type, which is not uncommon in the Midlands. It is built of brick, so its name suggests that it was painted white outside. There were two large rooms on each floor; they occupied the ends of the building, the staircases and landings being placcd in the centre. Each room probably had at least two windows, one in the front wall of the house, another in the back wall, an arrangement which permitted of thorough cross-ventilation. There was one reception room on the ground floor in adddition to a kitchen, scullery, etc. Only a few patients can have been received at one time, for the house contained but four bedrooms..

The back of the house had a south aspect, so every room, without exception, enjoyed the benefit of the sun. As only a few scattered houses were in the vicinity eighty years ago, the White House was situated practically in the open country. Moreover, it possessed the additional advantage of having a very large garden. The latter is divided into two unequal parts by a brick wall which runs transversely, suggesting that the smaller part remote from the house may at one time have been a kitchen garden. Some stables and outbuildings stood near the house, but are no longer in existence.

The photograph on p. 5 shows the back of Maney House and a portion of the grounds. Of the three-storied building, the part which faces the spectator is the back of the White House; the part which is remote has been erected since the time of Dr. Bodington. This addition approximately doubled the size of the original house, as becomes apparent from the photograph if reference be made to the position of the chimney-stacks; those which belonged to the White House are shown in full view, one at each end. None of the other buildings shown on the photograph existed during Dr. Bodington's tenancy, and it is possible that the bow-windows of the White House are also a comparatively recent addition.

His claim that the house was in every respect adapted for his

object was more than fully justified. Indeed, both the institutions in which he received cases of phthisis offered absolutely every advantage which could possibly be offered by private houses at a time when modern sanatoria were quite unknown. Both enjoyed picturesque and open situations, and received the maximum of sunshine; the bedrooms were large and well ventilated; the gardens and grounds afforded every opportunity for work, exercise, and recreation in the open air. They were, in short, well worthy not only of the purpose to which they were devoted, but also of the man who strove for that purpose—the pioneer of the treatment of pulmonary tuberculosis on sanatorium lines.

CERTAIN FEATURES OF TUBERCULOSIS WORK IN DENMARK.

By F. T. H. WOOD,

O.B.E., M.D. (LOND.), B.S., B.SC., D.P.H.

Medical Officer of Health and Administrative Tuberculosis Officer for the County Borough of Bootle.

THE writer had the privilege of participating in the interchange of health officers arranged by the Health Section of the League of Nations, which inspected Danish sanitary administration in June and July, 1924.

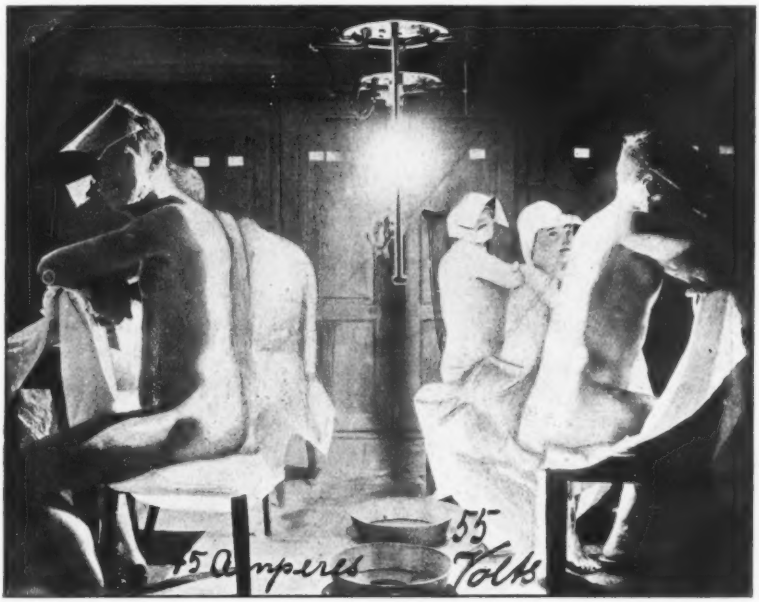
The organization of the campaign against tuberculosis naturally looms large in such a conspectus, and although the writer has elsewhere[1] submitted a summary of his impressions of the campaign, two or three elements therein may be presented in this journal as ancillaries not used in this country to the extent desirable. To avoid misunderstanding due to such selection of a few special points it should be said that the Danish scheme comprises on the one side generous provision of sanatoria, dispensaries and hospitals, combined with educational propaganda as in England and Wales, and on the other side a thorough veterinary supervision of the milk supply. The rigorous prosecution of the campaign on these lines has been followed by a fall in the death rate from all forms of tuberculosis from 2·8 per 1,000 in the quinquennium 1890 to 1894, to 1·5 in the quinquennium 1910 to 1914, and to 1·01 for the year 1922, with the result that Denmark now has the lowest tuberculosis death-rate in Europe.

[1] See *The Medical Officer*, September 20, 1924.

Ultra-Violet Light Radiation.

The first point I wish to emphasize is the whole-hearted recognition of the curative value of ultra-violet rays in non-pulmonary tuberculosis as evidenced by the possession, even by small country-town hospitals of carbon arc light installations for their production.

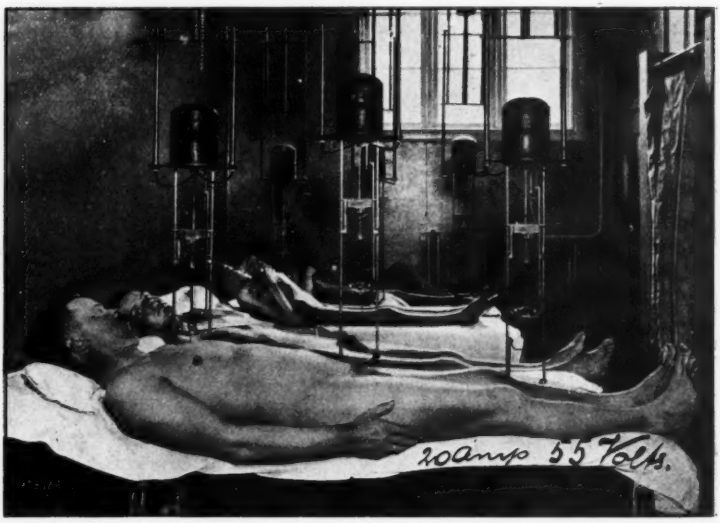
The therapeutic use of artificial sunlight dates from 1895, when Finsen recorded the cure of his first lupus case, and had extended by



LARGE FINSEN LIGHT BATH.

1913 to the point where the Finsen Medical Light Institute could report definite cure in 60 per cent. of the 2,000 cases of lupus treated up to that date, with considerable improvement in the remaining 40 per cent.; these successes were gained by local application of concentrated ultra-violet rays, but from 1913 onwards a supplementary method of treatment consisting of general light baths has been in vogue at the Institute, with the result that the number of cures in cases of less than four years' standing now reaches the figure of 95 per cent. Such general arc light baths showed themselves specially suitable also for the treatment of many other forms of tuberculosis, in particular tuberculosis attacking the bones, joints, and glands. These facts are well-

known in this country through the literature,[1] and through those who have had the opportunity of examining the work of the Finsen Medical Light Institute and its offshoots elsewhere; but a further promising advance has recently been made into territory usually abandoned without a struggle—viz., tubercular disease of the larynx. Dr. Ove Strandberg, head of the rhino-laryngological section of the Finsen Medical Light Institute, in a recent communication[2] to the Royal Society of Medicine recorded very encouraging results following upon the treatment by general arc-light baths of 100 cases of tuberculosis of the



SMALL FINSEN LIGHT BATH.

larynx; 53 patients were reported cured, in 34 instances by light baths alone, and in 19 instances by light baths plus surgical treatment.[3] Eighty of these cases had shown tubercle bacilli in the sputum, and 77 of them received their light treatment as out-patients. Further details are given in the paper referred to, and the success met with in the treatment of this supposedly intractable complication of pulmonary tuberculosis, following upon the brilliant [results recorded over many

[1] See for example "Artificial Light Treatment of Lupus and Other Forms of Tuberculosis," by Dr. Axel Reyn, *British Medical Journal*, September 26, 1923.

[2] "Treatment of Rhino-laryngological Tuberculosis by Finsen Light Baths, and Results," by Dr. Ove Strandberg, *Proceedings Royal Society of Medicine*, 1924, vol. xvii., pp. 25-30.

[3] We are indebted to Dr. Strandberg and The Royal Society of Medicine for the loan of the blocks illustrating Dr. Strandberg's work; and to Herr Axel Kjeldsen for those illustrating A Daytime Rest and Work Centre.

years in lesions of the skin, bone, and joints, clearly shows that it is no longer ultra-violet light rays that are on their trial, but rather the medical profession—clinical or administrative—with whom the employment of this agency rests.

A Daytime Rest and Work Centre.

The second element which merits special mention is the open-air resort established by voluntary effort at Kalvebod Bastion, the old fortifications of Copenhagen. This, in brief, consists of extensive

BATHING AT HJAELPEKORPSET, COPENHAGEN, DENMARK.

wooded grounds with a few inexpensive shelters, in which cases of pulmonary tuberculosis awaiting admission to, or after discharge from, hospital or sanatorium can spend the day from 9 until 7. The cases are under medical supervision and receive free treatment and board; in appropriate cases a regulated amount of work in the grounds is prescribed, which is followed, when ability to execute the work without harm is proved, by permission to work in the town during a portion of the day. In the case of married women with a home to look after, they arrive as early in the morning as possible, after having done essential work in their home receives rest treatment until 4.30 in the afternoon, after which they return to their homes to carry on their family duties. This open-air cure resort was established in 1909, and as since treated about 2,000 patients with an average duration of stay of 100 days.

School-Children's Holiday Camps.

Although not officially included as a weapon in the campaign against tuberculosis, one activity of Danish educationists cannot fail to be a valuable help in increasing the resistance of the child to tuberculosis

REST TREATMENT AT HJAELPEKORPSET, COPENHAGEN, DENMARK.

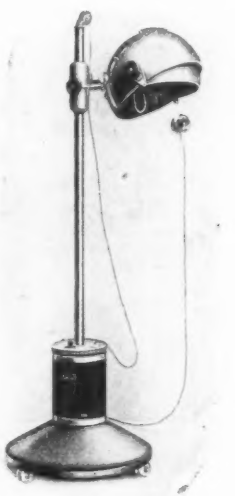
infection. The reference is to a well-organized scheme originating with the Teachers' Union by means of which children of the metropolis are sent into the country for their summer holidays, which last about six weeks. The children are either despatched to holiday camps under the supervision of two or more teachers, or are received singly or in twos or threes in the homes of the rural population, who provide free board and lodging, the State Railway granting free travel in all instances. The

extent of the movement can be judged from the fact that in 1916 out of 50,000 school children in Copenhagen 22,000 were placed with private families in the country, while about 3,000 spent their holidays in camp.

ULTRA-VIOLET RAYS AND THE TREATMENT OF TUBERCULOSIS.[1]

By PERCY HALL,
M.R.C.S., L.R.C.P. (LOND.),
Author of "Ultra-Violet Rays in the Treatment and Cure of Disease," etc.

"JEDERMANN hat am Ende ein bischen Tuberculose." Few will dispute the axiomatic truth of this statement and of its universality; yet fewer still, perhaps, have realized its complete significance. For ages "cures" for this scourge of civilization have been sought, and found, and ultimately discarded. The most commonly employed drugs include preparations of iron, iodine, calcium, and phosphorus. Vaccines and serums are used whose beneficial effects, if any, depend upon them stimulating the vital response of the organism, and increasing phagocytosis. Other methods, such as artificial pneumothorax, depend upon mechanically enforced rest for the diseased lung. Meanwhile, the natural and spontaneous cure of tuberculosis is an everyday occurrence. Space does not permit one, in this article, to dilate further upon the introduction. For the same reason the remainder of the article may appear to be somewhat dogmatic. But the writer's object is to arouse attention and direct original thought rather than to follow blindly time-worn grooves and finish a platitudinous contribution in a therapeutic dead-end.

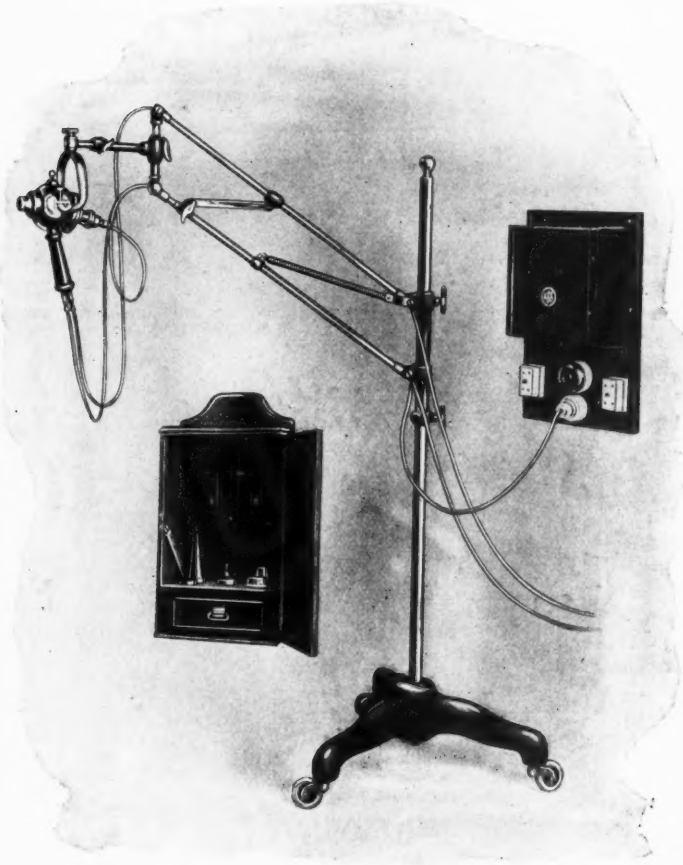


BACH TYPE ARTIFICIAL MOUNTAIN SUN (MERCURY VAPOUR) LAMP.

If we seek to correlate the above methods and remedies and to find a common factor, we shall emerge from the narrow confines of

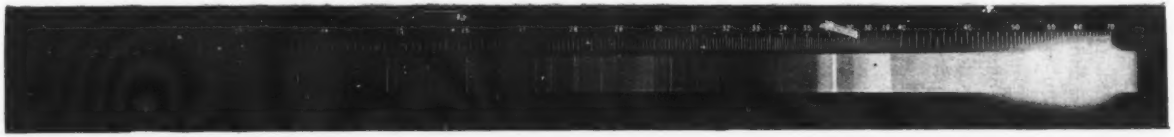
[1] Acknowledgment is made to Messrs. Watson and Sons (Electro-medical, Ltd.), and to the General Radiological and Surgical Apparatus Company, Ltd., for loan of blocks for illustrations, and to Messrs. William Heinemann (Medical Books), Ltd., for courtesy in permitting reproduction of such as have appeared in author's book referred to in title.

the laboratory and its myopic influences, and find ourselves in wind-swept open spaces and in the full light of day; and surely light *is* the common factor?

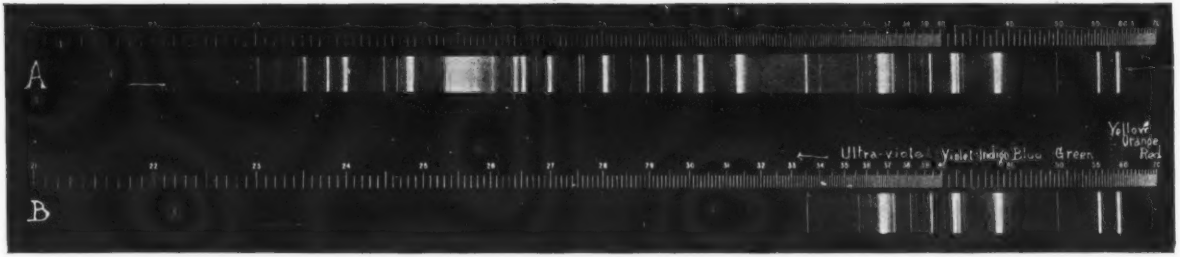


THE K.B.B. MODEL (WATER-COOLED) MERCURY VAPOUR LAMP.
This is intended for local use.

We are all, or should be, thoroughly acquainted with the genius and work of Dr. Rollier, who is curing tuberculosis at Leysin in the Alps by means of heliotherapy. No doubt the clean, pure Swiss air of the upland regions plays no small part in these cures. But it has been abundantly established that the *fons et origo* of the



SPECTRUM OF CARBON ARC.

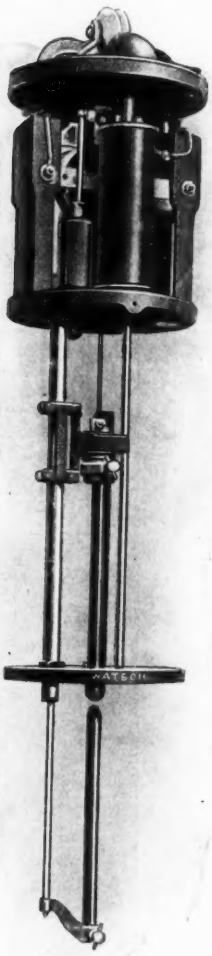


SPECTRUM OF MERCURY VAPOUR ARC.
A, Direct; B, after passing through ¼-inch plate-glass.

SPECTRUM OF TUNGSTEN ARC.

Photographs by S. Judd Lewis, D.Sc.

method is sunlight, and that it is the ultra-violet part of the solar spectrum which is chiefly concerned. We cannot send all our tuberculous patients to Switzerland, and we cannot treat them at home by heliotherapy, for the sun is but a rare and fugitive visitor to these misty islands of ours, and we all but refuse him permission to send any of his rays into our towns and cities, where we breed disease whilst we hunt for gold. We hang up a curtain of black smoke soon after the sun rises. The ultra-violet rays of the sun cannot penetrate these smoke clouds, and they are also impeded by the moisture in our atmosphere. But we have in ultra-violet radiation, artificially produced, a potent remedy against tuberculosis, which is available everywhere and at any time.

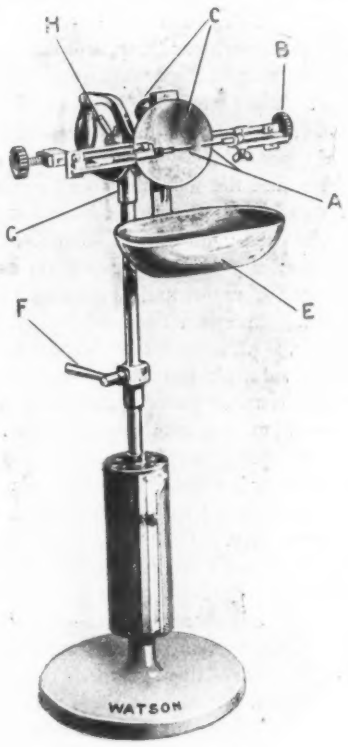


HIGH AMPERAGE CARBON ARC LAMP (AFTER REYN).

By ultra-violet radiation we can increase the amount of calcium, iodine, iron and phosphorus in the blood as well as that "fixed" in the tissues. Similarly can we increase the numbers of both erythrocytes and leucocytes, as well as the amount of hæmoglobin, as also phagocytosis. We can raise the hæmo-bactericidal power of the blood and speed up metabolism. By increasing the number of erythrocytes and their hæmoglobin we increase the "carrying power" of oxygen of the lungs and thereby put less strain upon the respiratory organs. All these claims have been substantiated both clinically and by laboratory experiments. For those readers interested and who desire more detailed in formation, a short bibliography is appended.[1]

[1] Rollier, A.: "Heliotherapy." London: Oxford Medical Publications.
Hill, Leonard; "Sunshine and Open Air." London: Arnold.
Hall, Percy: "Ultra-Violet Rays in the Treatment and Cure of Disease." London: Heinemann (Medical Books), Ltd.

Cases of so-called "surgical" tuberculosis offer better results than cases of pulmonary tuberculosis. Tuberculosis of bones, joints, glands, and peritoneum do exceedingly well, and, if taken in hand reasonably early, may be cured without subsequent deformity and without any surgical intervention. Cases of pulmonary tuberculosis in the early stages do well—both in children and adults. In the later stages, when there is much pyrexia and emaciation, the method is contra-indicated, or should, if used, be administered with the greatest care and discretion. In such cases, if the dosage be small, frequently repeated and spread over a longer period, benefit can, nevertheless, usually be shown.



TUNGSTEN ARC LAMP.

This is the author's design with fixed resistance showing focal mirror (interchangeable with plane reflector) in position.

Indeed, it is well at this point to issue a strong warning against anything like indiscriminate use of this comparatively new remedy. Like all true and potent remedies, it is capable of producing harmful results if unskilfully administered. The best intentions are no excuse for ignorance, and all those who would avail themselves of this method are counselled to gain a sufficient knowledge of it before they commence to practise it. Already one hears of so-called "clinics" being opened in London by nurses and lay-people, who are circularising the medical profession in order to obtain patients. Such attempts to exploit an invaluable new method of therapy are likely to bring discredit upon all concerned. The giving of this treatment by nurses, except under the strictest skilled medical control, cannot be too strongly

condemned. Instruments and methods of precision require skill, which only comes from long study and experience, and cannot be acquired by the reading of an instrument maker's catalogue. In addition to the above-mentioned forms of tuberculosis which are curable, lupus is another form of tuberculous disease in which brilliant results can be achieved.

The chief sources of ultra-violet radiation are the carbon arc lamp, the mercury vapour lamp, and the tungsten arc lamp. Various patterns are available, each of which have their own particular users and advocates. The carbon arc lamp is of chief value in institutions where a number of patients must be treated at the same time. There are two chief types—the Reyn model (as used in the Light Institute at Copenhagen), and the "flaming-arc" model, after Eidinow. They consume from 30 to 60 amperes of current, or even more. Two or more lamps may be used "in series." The Reyn model has a voltage of 50 across the arc; the Eidinow model 60 or more. Both types require the "direct" current, and a suitable resistance must be included in the circuit. Patients sit around the light, or lie underneath it, stripped, at a distance of about 3 feet. Exposures last from ten minutes to several hours, and are repeated three or four times weekly for several months The eyes must be protected with tinted-glass goggles. The arcs are open and are automatically adjusted.

The mercury vapour lamp is made in two types. The original Krohmayer is "water-cooled," is rich in the shorter wave-lengths, being suitable for the treatment of local lesions only. It is very fragile and unsatisfactory. The other type is larger, and air-cooled. It is in greatest use on the Continent and in America. It can be used for individual or group exposures.

The arc is struck by a column of mercury enclosed in a quartz tube. Quartz permits ultra-violet rays to pass; glass absorbs them. The disadvantage of these lamps is the fragility of the burners and expense of renewal. With use there is a gradual deposit of mercury on the inner wall of the quartz tube, which lessens and finally entirely prevents the ultra-violet radiation. The only *constant* sources are the carbon and tungsten arc lamps.

The tungsten arc lamp—which is the type most favoured by the writer for all-round usefulness in individual exposures, and of which a model made to his design by Messrs. Watson and Sons (Electro-medical), Ltd., is figured—burns electrodes of pure tungsten. This is undoubtedly the richest-known source of ultra-violet radiation, the spectrum showing an almost continuous band of intense lines ranging throughout the ultra-violet region, down to the shortest wave-lengths of therapeutic value. The amperage can be varied, but a fixed amperage of five is sufficient for most purposes. The only drawback is the

expense of the electrodes; but the shorter exposures required, the fewer number, and the smaller consumption of electricity counterbalance this.

Factors of dosage for all lamps are determined by distance, exposure time and amperage, spacing and number of exposures, and the idiosyncrasy of the patient. An exposure to any source is followed in a few hours by an erythema of the skin irradiated, which, in turn, is followed by desquamation and, subsequently, pigmentation.

Some authorities state that the degree of pigmentation is commensurate with the rate and amount of improvement, and is a guide to prognosis. The writer does not wholly agree with this dictum. Too rapid pigmentation is to be avoided, as it is protective against further dosage, and prevents the "provocative reactions" which, if carefully judged, are followed by an increased immunizing response.

The best results in artificial heliotherapy are obtained by exposing the whole body—or the trunk—to the source of radiation, whether the disease to be treated is localized or otherwise. Indeed, a local lesion may be covered up by a dressing! A knowledge of the "wave-lengths" employed is important. The most effective rays are those whose wave-length lies between 3,000 and 2,000 Ångström units (300-200 $\mu\mu$).

In conclusion, the writer ventures to prophesy that, in a very short time, no sanatorium—or, indeed, tuberculosis dispensary—will be deemed to be properly equipped unless it has its ultra-violet installation.

THE PRESENT POSITION OF INSTITUTIONAL TREATMENT.

By G. LISSANT COX,

M.D. (CAMB.),

Central Tuberculosis Officer, Lancashire County Council.

At the request of the editor, I have attempted to write a very condensed account of the present position of institutional treatment of tuberculosis, using as illustrations our own experience in Lancashire. County and county borough schemes have now been in operation a little over ten years. All are based on the Astor Report of 1912, and its accuracy will be apparent. We may conveniently divide the subject into the following heads: Sanatoria and pulmonary hospitals; training colleges and village settlements; general hospitals and special hospitals for children; poor law infirmaries.

The Work of Sanatoria and Hospitals for Pulmonary Tuberculosis in Adults and Children.

In the administrative county of Lancaster roughly one-fourth of our new adult cases are found to be in the first or early stage of consumption, one-half in the second or intermediate stage, and the remaining one-fourth are advanced or third stage cases. As regards children with pulmonary disease the number is comparatively small, and a most welcome decline in their number is shown by the fact that the

HIGH CARLEY SANATORIUM, NEAR ULVERSTON: PATIENTS AT WORK, MOWING.

case notifications have fallen progressively from 291 in 1920 to 224 in 1923.

In England and Wales there were 16,095 beds[1] available for pulmonary cases (early and advanced) in 1924; this is slightly above the standard suggested by the Astor Report. In the administrative county of Lancaster our total accommodation for pulmonary cases at the present time is 638 beds, all of which are usually occupied (393 sanatorium, 245 pulmonary hospital); whereas by the Astor standard we should have about 700. It remains to add that schemes are already in hand for the addition of 90 to 100 beds to meet the number of

[1] Annual Report of the Chief Medical Officer of the Ministry of Health for 1923, p. 70.

patients now on the waiting list. The accommodation of the County Council has been built up on the actual requirements of patients, and thus, after delays due to the war and the stringent financial position, we are arriving at a figure very near the Astor Report standard.

The pulmonary hospital should be for the purpose of treatment and isolation of advanced and infectious patients and for educating them in general methods of hygiene, which can be applied when the patient returns home, unless the home circumstances are such as to warrant a permanent stay in the hospital. The problem of dealing with advanced

HIGH CARLEY SANATORIUM, NEAR ULVERSTON: WATTLE HURDLE MAKING.

and highly infectious cases is more difficult in a large county than in a comparatively compact county borough. First, it is undesirable to have large numbers of advanced or acutely ill cases in one institution; and, secondly, where such cases are treated they should be as near their homes as possible for convenience in visiting by their relatives. In a large county like Lancashire, with a population of one and three-quarter millions, and containing over a million acres, the pulmonary hospitals consist of three adapted country mansions, taking about forty-five patients each, one or more small-pox isolation hospitals, and buildings constructed by the County Council or rented by them, and attached to existing fever hospitals. Altogether, the Lancashire County Council own or rent beds at fifteen hospitals. As far as possible patients from

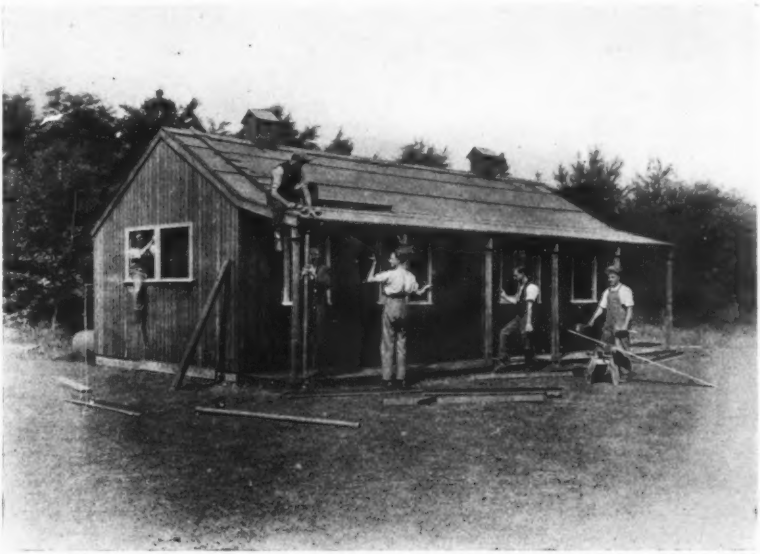
each of the five dispensary areas, into which the county is divided, requiring isolation are accommodated in the pulmonary hospitals situated in the area; and in order that the tuberculosis officers may keep themselves acquainted with their cases, arrangements have been made (with one or two exceptions only) for the tuberculosis officers periodically to visit the hospitals in their areas, and to confer with the medical superintendents on the following matters: (1) The question of extension of patients' treatment on their return home, having special regard to the home conditions, which are known to the tuberculosis officer; (2) the question as to the patients' future treatment; (3) applications from patients for transfer to other institutions, or for their discharge home; and to settle, where possible, any difficulties or complaints by patients which may arise. Further, in four of the five dispensary areas one of the hospitals is, or will be, in charge of the dispensary tuberculosis officer—a very useful arrangement, because patients go to these hospitals from the area administered by the tuberculosis officer, who is provided with the means of applying certain forms of treatment and carrying out clinical work.

A word or two as to results. From July, 1912, to December, 1923, 3,583 patients (Stage I., 184; Stage II., 1,248; and Stage III., 2,151) were admitted to pulmonary hospitals; of these 132 were transferred to a sanatorium, 2,516 were discharged to their homes, and 935 died in hospital. The real results of this treatment are the declining death-rate, the declining incidence-rate, and particularly the smaller number of children with pulmonary tuberculosis (see notification figures given at commencement of article).

The sanatorium should be reserved for early cases presenting a reasonable prospect of arrest or cure of the disease, and the stay of those cases responding to treatment should not be limited. In Lancashire we have had cases remaining in sanatoria so long as two years. It is essential that attention should be paid to their mental state during treatment, and those who are able should be given, as far as possible, congenial and purposeful work to perform. The accompanying illustrations indicate without further explanation what is being done in this direction at two of the Lancashire County Council sanatoria. Such useful articles as poultry-houses, garden seats, cupboards, notice boards, tables, bookcases, step-ladders, huts, sheds, and spinal boxes have been made by patients, in addition to such work as boot-repairing, painting, and simple estate repairs. Female patients have made table-mats, d'oyleys, raffia baskets, and needlework. On several occasions work done by patients has been exhibited at health weeks organized in towns, and the articles offered for sale, the proceeds going in aid of the entertainment or other fund of the sanatorium. Ample healthy amusements and recreation should also be provided for the patients. These

various means of keeping patients occupied during institutional treatment have had the effect of reducing to smaller proportions the number of patients terminating their period of treatment prematurely, as evidenced by the fact that the average duration of treatment is now three or four weeks longer than it was several years ago.

Results of Sanatorium Treatment.—In recent years less and less importance has been paid to the immediate results of treatment—that is, the condition on discharge of patients from sanatoria, as so much depends on the classification adopted by the medical superintendent and



ELSWICK SANATORIUM, NEAR KIRKHAM, LANCS: CONSTRUCTION BY PATIENTS OF WOMEN'S RECREATION ROOM.

the type of case admitted. In my own county we have had during the years 1912 to 1923 nearly 20 per cent. of our positive sputum early stage cases discharged as quiescent, whilst the figure for those with negative sputum is slightly over 40 per cent., and for cases with no sputum over 50 per cent. Our Lancashire figures in common with the country generally for many years have shown that the earlier the stage of disease at which the patient is admitted to a sanatorium—more especially when tubercle bacilli are not found in the sputum—the greater are the beneficial effects of several months' sanatorium treatment.

The main test of sanatorium treatment under modern social and economic conditions lies in the after-results of treatment. I have in the past three years (1921-22-23) published in my annual reports an

analysis of the after-histories of a large number of patients that had undergone sanatorium treatment, compared with the after-histories of patients similar, as far as possible, in age, sex, and severity of the disease that had not had sanatorium treatment. The patients taken for this investigation comprised all the adult cases of pulmonary tuberculosis, diagnosed as being in the early or intermediate stage of the disease, who applied to the County Council for treatment during the years 1914 to 1918, with certain necessary deductions for removals out of the county, untraceable cases, patients in whom the diagnosis subsequently was not confirmed, and those who died from causes other than tuberculosis. It is necessary to add that "sanatorium cases" mean patients that completed a stay of two months or more in a sanatorium, sent for probable arrest or cure of the disease (as distinct from a pulmonary hospital, where treatment may have been given in the later stages of the disease), and that many of the "non-sanatorium cases" have also received treatment in a pulmonary hospital or observation hospital or have had a stay of less than two months in a sanatorium, their treatment being interrupted for some reason or other. The net numbers of cases which remained for investigation were 4,067 in 1921, 3,948 in 1922, and 3,868 in 1923. Through the dispensary staff the position, as at the end of the years named, of each case was ascertained, and from this information the after-results were classified. Space does not permit of the detailed tables being given here, but I give the main conclusions which emerge from this investigation:

1. So far as comparison is possible, patients in the early and intermediate stages of the disease that have undergone a course of sanatorium treatment, even for three or four months, fare appreciably better in later years than those that have not received such treatment.

2. Differences in the mortality of the sanatorium and non-sanatorium patients are given below:

	1921.	1922.	1923.
(*a*) Patients with negative or absent sputum:			
Percentage of sanatorium cases that had died at the end of the year stated ...	14·0	16·0	17·0
Percentage of non-sanatorium cases that had died at the end of the year stated	37·7	42·6	45·3
(*b*) Patients with positive sputum:			
Percentage of sanatorium cases that had died at the end of the year stated ...	61·2	66·2	69·2
Percentage of non-sanatorium cases that had died at the end of the year stated	81·3	84·8	87·4

I consider that, given reasonably early cases for treatment and an institution with a capable superintendent, sanatorium treatment is justified by its results.

3. It would appear (from one of the detailed tables not produced here) that in the age-group 15 to 25 years of the *positive* cases, sanatorium treatment, merely regarded from the point of prolongation of life, is very little better than home treatment. It must never be forgotten, however, that from the more important side of prevention of the disease a stay in a sanatorium has, in the main, a definite educational result on the patient, his family, and his friends.

ELSWICK SANATORIUM, NEAR KIRKHAM, LANCS: PATIENTS' WORKSHOP.

Training Colonies for Cases of Pulmonary Tuberculosis.

Except in a few instances, training colonies or sections were all established after the war, mainly as the result of the report of the Departmental Committee published in 1919.[1] The subject of training colonies was discussed in 1924 at considerable length at the tenth annual conference of the National Association for the Prevention of Tuberculosis,[2] and the general opinion prevailing was, I think, that they had not achieved satisfactory results. With this view I entirely agree. In Lancashire, out of forty patients carefully selected and sent for a course of treatment combined with training only seven completed the course, the others leaving prematurely on their own responsibility

[1] Inter-Departmental Committee on Tuberculosis (Sanatoria for Soldiers), 1919.
[2] *Proceedings of the National Association for Prevention of Tuberculosis*, Annual Conference in London, July, 1924. London: N.A.P.T. Offices, 20, Hanover Square, W. 1.

or for other reasons, and in May, 1924, only two of the seven trainees were reported as successfully following the occupation (poultry keeping) in which they had been trained. We have found from experience that the employment which the voluntary care committees are able to find for patients who have been to a colony bears little or no relation to the work in which they had received training, and I suggest the time has come when we should consider merging these training colonies in or with a sanatorium, thus giving good facilities for purposeful work at the institution.

Village Settlements for Tuberculous Persons.

At the present time, the establishment of communal settlements forms the most highly specialized part of any tuberculosis scheme, and, as is well known, is carried out with great success by Dr. Varrier-Jones at the Cambridgeshire Settlement at Papworth. There are two or three other village settlements established in the country, and these are all, I think, administered by voluntary or private bodies. The settlements as at present developed deal only with men suffering from pulmonary tuberculosis, although at Papworth a women's hostel has been opened. Although Papworth is undoubtedly a brilliant success, I am afraid it does not follow that the principles put into practice there could be repeated with equal success throughout the country, owing to obvious difficulties, such as marketing of produce and manufactures, the procedure of public finance, and finding first-class business ability in a number of medical superintendents.

General and Special Hospitals for Tuberculosis.

Accommodation.—Turning to Sir George Newman's report for 1923[1] it is therein stated that early in 1924 there were 521 beds available in general hospitals for cases of non-pulmonary tuberculosis, and 3,499 beds available in institutions wholly for children (presumably for those suffering from non-pulmonary tuberculosis). It is admitted on every hand, I think, that the accommodation in the country for non-pulmonary tuberculosis is quite inadequate. In the administrative county of Lancaster, where the incidence of non-pulmonary tuberculosis is about the same as the average for the country, we have altogether seventy patients undergoing treatment in general hospitals, and calculated in proportion to population, there should be about 1,500 beds available in general hospitals throughout the country. There is evidence, I think, that many County Councils and County Borough Councils are not giving sufficient attention in their tuberculosis schemes to cases of non-pulmonary tuberculosis, and only voluntary or private bodies deal with this type of case in many instances.

[1] Annual Report of the Chief Medical Officer of the Ministry of Health for 1923, p. 70.

If one admits the insufficiency of accommodation for non-pulmonary tuberculosis, particularly as regards adults, perhaps less so as regards children, is the remedy merely to increase the number of beds? It is impossible to leave out here a brief reference to bovine tuberculosis. If the bacteriologists are correct, a large number of non-pulmonary cases are due to tuberculous cattle. This cause removed there would be considerably less expensive accommodation required, much less suffering, fewer deaths. If nothing is done to prevent bovine infection, then we find from our experience that to treat all non-pulmonary cases, adults and children, we ought to have available at least 350 beds—that is, one per 5,000 of the population.

General Hospitals.—The majority of the large general hospitals in Lancashire are approved by the Ministry of Health, and the County Council has entered into agreement with the governing bodies of twenty-two of such institutions for the treatment of county cases. We are able to secure the prompt treatment of urgent cases, whilst ordinary cases go on the hospitals' waiting-list and are admitted in turn.

Combined Cases.—Great difficulty is experienced generally in the country in securing the treatment of patients suffering from both pulmonary and non-pulmonary tuberculosis who require attention mainly for the latter condition. Probably about one bed per 45,000 or 50,000 of the population would suffice for these rare but very distressing cases.

After-Histories of Children who received Treatment in Special Hospitals.—Pending the issue by the Government of some standard tables for recording the after-histories of cases, it is not possible to arrive at any figures for the whole of the country as to the after-histories of children who received treatment at special hospitals. For several of the larger hospitals special reports are issued, and these all show the most excellent results which are obtained in the treatment of children. For Lancashire, at the end of 1923, out of 132 children who had received treatment in special hospitals, 71 per cent. were found to be well and attending school, 16 per cent. were unfit for school, and 13 per cent. had succumbed.

Tuberculous Subjects and Poor Law Infirmaries.

There are altogether some 132,000 beds available in poor law infirmaries in England and Wales[1] for the accommodation and treatment of the sick, and a fair proportion of these are for tuberculous cases. The line dividing the duties of the County and County Borough Councils and the Boards of Guardians in relation to cases of tuberculosis is fairly well defined under existing legislation: the poor law authorities

[1] Annual Report of the Chief Medical Officer of the Ministry of Health for 1923, p. 119.

are responsible for providing ordinary medical relief for persons who are in necessitous circumstances; the County Councils and County Borough Councils are charged with the arrangement of special treatment for patients suffering from tuberculosis. There is, however, a considerable tendency for a larger proportion of these cases to be treated by the local authority, as the patients naturally prefer to avoid pauperization. The test is, I think, that if a patient is in necessitous circumstances, and his home conditions are so bad that he requires substitute accommodation for his private home, or should he be so afflicted as to be unsuitable for treatment with normal tubercular patients, then he is eligible for admission to a poor law infirmary where he can be maintained and given ordinary medical treatment. In Lancashire, we have established a working co-operation between the poor law medical officers and the tuberculosis medical staff, and have had from time to time consultations between the two respective officers in regard to individual cases of tuberculosis, resulting in many transfers to county sanatoria or hospitals for special treatment.

General Conclusions.

1. Given reasonably early cases for treatment, and a capable medical superintendent, sanatorium treatment is justified by its results.

2. At the sanatorium attention should be given to the patients' mental state; purposeful work should be carried out, and healthy amusement and recreation arranged.

3. The attempts made generally throughout the country to train patients in new occupations, at special vocational training centres, have not been attended with success, and I suggest careful consideration be given to the merging of training centres in or with the sanatorium, or converting them into sanatoria.

4. The accommodation for the treatment of adults and children suffering from non-pulmonary tuberculosis is insufficient for present-day needs, and schemes for providing additional beds should be proceeded with. The number required—about one bed per 5,000 of the population—could be reduced by prevention of bovine infection.

5. Hospital accommodation for the relatively few cases suffering from both pulmonary and non-pulmonary tuberculosis, and requiring treatment primarily for their surgical condition, is almost non-existent in the country, especially in those instances where the sputum is positive.

ON ERYTHEMA NODOSUM AND ITS ASSOCIATION WITH TUBERCULOSIS.

By JOHN A. WATT,

M.B., CH.B., D.P.H. (ABERD.),
Senior Clinical Tuberculosis Officer for Derbyshire.

The skin eruption known as Erythema Nodosum and accompanying constitutional symptoms are usually associated with infective and septic diseases of the body. The constitutional symptoms may be slight or severe. In moderate cases there is pyrexia—the temperature rising to 102° F.—for two or three weeks accompanied with malaise and general ache. In severe cases the febrile period may persist for periods up to three months. Headache is a common symptom. It may be present before the rash appears and then pass off, or it may persist for sometime after the eruption fades. Cough is present in cases associated with tuberculosis. Tonsillitis and swelling of the cervical glands may occur. In septic cases joint pains are present, but usually without swelling or redness of the joints. There may be transient systolic murmurs and tachycardia. Convalescence is often prolonged, and there may be protracted anæmia.

There are a few other interesting points. The age incidence falls mainly upon children and young adults and is more frequent in the female sex—3 to 1. The eruption, which lasts from three to six weeks, is most prominent on the anterior tibial region, but may occur on the arms or on any part of the body, and has been noted on the conjunctiva. The nodes come out in successive crops and follow chameleon-like changes in colour. They vary much in size, are tender, appear to soften, but never break down. This characteristic and their rapid disappearance distinguishes them from Erythema Induratum (Bazin's disease). Rarely they are accompanied by Erythema Multiforme. Second attacks and relapses are not uncommon. E. S. Stubbs, of Belper, has had a patient with three attacks and another with five attacks.

While there is general agreement as to the clinical features of Erythema Nodosum, great diversity of opinion exists as to its cause and nature. Authorities on diseases of the skin associate it with rheumatic conditions, malaria, digestive disorders, auto-intoxication, drugs (Stelwagon), chorea, endocarditis, and quinsy (Walker), tuberculous meningitis, streptococcal infection, ptomaine poisoning, intradermic injection of tuberculin (Sequeira), syphilis (Harrison), and cerebro-spinal fever (Osler).

It has been suggested that it is an acute specific fever and the term "nodal fever" or "febris nodosa" given. In this country J. O. Symes, of Bristol,[1] upholds this theory. He points out that multiple cases occasionally occur in the same family, and records a case of transference of infection between three or four persons. He says it has a definite seasonal prevalence in spring and autumn, and the age incidence falls upon youth and adolescence. Small localized outbreaks have occurred in schools and districts. The evidence is not convincing; the heavy incidence of the disease in girls about the age of puberty is difficult to explain as an infective disease Further, there is no proof that it is immunizing, and the records of infectivity are scanty.

It would appear that the isolated sporadic cases, which constitute the bulk of the disease, are associated with various infections of which an important one is tuberculosis. In France and Germany many investigators, including such an authority as Calmette, believe Erythema Nodosum to be due to tuberculous bacillæmia. Pons showed a section of a nodule presenting the aspect of a tuberculous follicle containing a giant cell in the centre, surrounded by epithelioid cells. J. O. Symes reported a case in which he found typical tuberculous giant cells in excised nodules. In 1913 Landouzy and Loederich, by grinding up and inoculating a nodule of Erythema Nodosum excised from a living patient, succeeded in transmitting tuberculosis to a guinea-pig. Landouzy, Loederich, and Richet on two occasions succeeded in demonstrating the presence of the tubercle bacillus in a small vessel. E. Moro, after the rubbing of a tuberculin ointment into the skin of the chest, has seen Erythema Nodosum break out on both feet. Chauffard and Troisier, in applying the intradermal reaction with a dilute tuberculin, witnessed the development of a nodule exactly like Erythema Nodosum. Chauffard and Girard by a simple injection of tuberculin caused a complete reactivation and repetition of the disease, with fever, eruption, and arthralgia. They consider that the bacilli arrested in the skin secreted their toxins and gave rise to the formation of nodules. In carrying out the Von Pirquet test in one of my cases the scarified areas closely resembled Erythema Nodosum patches.

The clinical evidence supports the same view. H. J. Vetlesen, of Christiania,[2] in an important research into 45 cases, considered that 26 per cent. could be regarded as due to tuberculosis. J. O. Symes[3] found gross tuberculous lesions present in 10 per cent. of his cases. E. S. Stubbs, in a small series of 10 cases carefully investigated and radiographed, found 50 per cent. were associated with tuberculosis. H. Ernberg[2] made a clinical study of 55 cases all under observation throughout the eruption. He examined the lungs and often found transient disease. Sometimes there were rhonchi confined to one lung, or prolonged expiration over part or nearly the whole of one lung, or

considerable areas of dullness. He made an X-ray examination of 39 cases, and found in 35 extensive peribronchitic and hilus disease in an active state. He believed Erythema Nodosum occurs relatively early in the course of tuberculosis and should be regarded as the organism's reaction to autogenous tuberculinization. E. Faeber and M. Boddin [5] at the University Clinic of Berlin investigated and observed 23 cases in children over a period of seven years. Twenty-one were found to be infected with tubercle; two cases were found completely free from tubercle, both during the eruption and for some months after. One child died from tuberculous meningitis and one from abdominal tuberculosis. Of the remaining 19 infected children, 8 cases showed radiograms with enlarged hilus glands up to the size of a pigeon's egg, but without marked clinical signs. The hilus changes were fully developed within 8 days of the eruption, and after a year or two gradually cleared up in the manner of hilus tubercle.

The following case, which has important bearings on some of the problems under discussion, is reported for the first time. A. W., a domestic servant, aged eighteen, was sent to me by Dr. Broster, of Wirksworth, on June 20, 1924. In October, 1923, she commenced with an attack of Erythema Nodosum, which lasted for about six weeks. Towards the end of November, 1923, the submaxillary and upper cervical glands became swollen on both sides. Under treatment the glands quickly came down, and by Christmas there was only one gland remaining enlarged, at the angle of the left jaw. She kept well until the middle of May, 1924, when the glands again commenced to enlarge, and about June 9 another attack of Erythema Nodosum set in. Her condition on June 20 was as follows: Weight 10 stone, pulse 76, anæmic, but well nourished, the submaxillary glands and supra-clavicular glands greatly enlarged on both sides. They were soft and elastic, with slight tenderness on palpation. Outlying glands freely movable. No enlarged glands in the axilla or groin. Spleen not enlarged. There were patches of Erythema Nodosum on the lower part of both legs. One or two spots were fresh, but most were in the violaceous stage and were tender. The tonsils and fauces were congested. A radiograph showed increased hilus shadows on both sides.

During the last year I have seen seven cases where Erythema Nodosum has occurred in patients suffering from tuberculosis. I have reported two boys [4] with extensive disease of the lungs confirmed by radiographic and other tests, one of whom died after five months from tuberculous meningitis. The other cases have included a woman of fifty-five with pyrexia for three months and diffuse infiltration of the right lung, three children with hilus tuberculosis, and the girl of nineteen now recorded with tuberculous adenitis.

From a study of these cases and the literature ([6] and [7]) it would appear that Erythema Nodosum as a tuberculous manifestation may occur on the outbreak of a tuberculous bacillæmia arising from a focus in the body such as caseous-bronchial, mesenteric, or cervical glands, and this may be followed by death in three or four months from tuberculous meningitis. But tuberculous bacillæmia is not necessarily fatal, and in less severe cases the natural resistance of the body is sufficient to overcome the bacillary invasion, and then pleurisy or limited infiltration of the lung occurs. There can be no doubt that temporary conditions of tuberculous bacillæmia are often unrecognized and pass as febrile attacks of unknown origin. In other cases Erythema Nodosum occurs in the course of tuberculous disease of the hilus glands when a chronic smouldering infection bursts into activity. One must conclude that tubercle bacilli and their products pass into the circulation and Erythema Nodosum results. If this is correct the nodes would be analogous to the rose spots in typhoid fever and the secondary eruption in syphilis.

The nodose eruption in Erythema Nodosum differs from the tuberculides. It always clears up in a few weeks, and leaves no scarring whatever the bacterial cause may be. Cornet[8] says the tuberculides do not arise from bacilli with a high degree of pathogenicity, but from dead human bacilli, fragments of bacilli, bovine bacilli, as well as from the toxines. He believes miliary tubercles in the skin to be exceptional, though sometimes seen in strumous children after measles.

Finally, the association with septic diseases requires to be worked out. We know tonsillitis, cervical adenitis, and joint pains often occur. It is likely that septic conditions of the tonsils and teeth causing mild septicæmia may account for many cases of Erythema Nodosum. E. D. D. Davies (Charing Cross Hospital) in the discussion at Bradford this year on chronic tonsillitis said that some cases of Erythema Nodosum have apparently been cured by enucleation of the tonsils.

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A NOTE ON NON-THERAPEUTIC PNEUMOTHORAX CONNECTED WITH TUBERCULOSIS.

DOES IT EVER HAVE A BENEFICIAL EFFECT, LIKE THAT OF THERAPEUTIC PNEUMOTHORAX? — THE INFLUENCE OF TRAUMA (INCLUDING MUSCULAR EFFORTS) AS AN EXCITING CAUSE.

By F. PARKES WEBER,
M.A., M.D., F.R.C.P.

Roughly speaking, there are two main groups of non-therapeutic pneumothorax connected with tuberculosis: (i.) A group including the typical cases of chronic pneumothorax, hydropneumothorax, and pyopneumothorax in tuberculous patients—mostly of bad prognosis. (ii.) A group including most of the cases of so-called "idiopathic" pneumothorax in apparently healthy persons, arising spontaneously or in connection with some—often very slight—muscular effort, such as lifting a weight, running, laughing, coughing, or sneezing. The abnormal physical signs generally disappear within four or five weeks without special treatment. The most probable explanation of these cases is, I believe, that at some time or other a slight tuberculous bacillæmia (perhaps regarded at the time as an attack of "influenza" or "febrile pulmonary catarrh") resulted in the formation of a certain number of subpleural tubercles. One of these tubercles led to local pleural adhesion, and afterwards to a superficial emphysema-bulla adherent to the parietal pleura; as time went on the wall of the bulla gradually became thinner, and finally ruptured owing to some greater or lesser effort—or "spontaneously"—thus leading to the occurrence of "idiopathic" pneumothorax in an apparently healthy person. In my Mitchell Lecture on the "Relations of Tuberculosis to General Bodily Conditions" (London, 1921) I explained this view in detail, and included, as an appendix, a long list of references relating to the subject.

It is possible that one in every million apparently healthy persons has an adherent subpleural emphysema-bulla of the kind that may ultimately (in connection or not with some special muscular effort) rupture and give rise to a pneumothorax, which will in most cases disappear spontaneously within four or five weeks. But an exactly similar emphysema-bulla, resulting from a past (healed) tuberculous

process, may be present—though doubtless very rarely—in patients suffering from severe active tuberculosis; thus a patient actually dying from pulmonary tuberculosis may develop a spontaneous dry pneumothorax of the same kind, which disappears completely in four or five weeks, even though death follows soon afterwards owing to the severe progressive pulmonary tuberculosis.

If this view is, as I believe, correct, it is obvious that non-therapeutic pneumothorax can hardly ever have a beneficial effect. In group (i.) it generally becomes chronic, and often (unless it can be cured by some modern operative method) hastens the onset of the patient's death. In group (ii.) the patient is usually otherwise in satisfactory health; and though the pneumothorax disappears spontaneously in most cases without doing any harm, it does no good. It might conceivably, by some extraordinary (almost incredible) combination of circumstances, occur over a tuberculous lung, the collapse of which would be beneficial; but in such a case the air would be spontaneously soon absorbed from the pleura, so that the pneumothorax would not last long enough to exert a therapeutic result, and an artificially maintained (therapeutic) pneumothorax would be better.

The above points seem to me self-evident from a study of the subject, but I find that they are by no means generally recognized. Nor is the possible relation of pneumothorax of either class to trauma (including muscular efforts). It is clear that the final exciting cause of the pneumothorax in either group may be some (generally slight) muscular effort. But in group (i.) it is the active tuberculous disease which is mainly responsible, namely, the rupture of a tuberculous focus into the pleural cavity, and in group (ii.) it is the thin-walled emphysema-bulla which must be regarded as the chief cause. Moreover, from the assurance point of view, it should be remembered that in the latter group the pneumothorax hardly ever leads to more than temporary inconvenience.

ASSOCIATIONS AND INSTITUTIONS.

THE KENT COUNTY COUNCIL SANATORIUM, LENHAM.

DR. ALFRED GREENWOOD, barrister-at-law, and County Medical Officer for Kent, has kindly supplied us with the following concise description of the sanatorium which serves his county:

The Kent County Council Sanatorium, Lenham, is situated two and a half miles from the village of Lenham and half a mile from the Ashford Road. It is 600 to 700 feet above sea-level, and stands on nearly sixty acres of ground of chalky formation. The southern view is one of the most picturesque in Kent, looking across the South Downs and the Weald of Kent towards the sea, which is clearly visible on a fine day. The main pavilions extend east and west, with a central administration block. On the southern aspect there is one detached block. All buildings are two-storied. The sanatorium accommodates 125 patients —75 male and 50 female—and there are in addition 40 places for vocational training of ex-service men in the training section. Sanatorium patients are warded in single, two, four, and six-bedded cubicles, whilst the trainees are housed in wooden huts for two patients each on the west side of the sanatorium. The general routine of treatment is similar to most institutions of this description, consisting of rest, regulated exercises, and work in grades. There are four rest periods during the day. Patients of both sexes muster every morning for the inspection of temperature charts by the Medical Officers before the work for the day is commenced. Gardening is the main work of the male patients, supervised by the gardener, who allots, under the direction of the Medical Officers, suitable work corresponding to the particular grades. The female patients attend to the cleaning of their cubicles and any outdoor work allotted to them. The training section teaches three trades under skilled instruction—viz., painting and decorating, carpentry, and upholstery. The trainees work six and a half hours per day—namely, from 9.30 a.m. to 12.30 p.m., and from 1.30 p.m. to 5 p.m. The institution has its own X-ray plant as an aid to diagnosis and treatment. Artificial pneumothorax is employed in suitable cases. The sanatorium is well adapted for early and intermediate cases of pulmonary tuberculosis, which make excellent progress towards recovery. No surgical cases are treated. Recreation rooms are provided. The room for males is adapted to meet requirements for concerts and plays, as it has a small but complete stage. Whist drives and concerts are held at frequent intervals. Limited golf and croquet during the summer months provide additional amusement. Croquet is played on a specially constructed lawn. Services are conducted in the sanatorium Church each Sunday by the Chaplain and occasionally on week-days. Under the direction of the Medical Superintendent the patients manage their own canteen for purchasing small necessities. The profits help to supplement the entertainment grant of the County Council. The sanatorium produces its own electric light, and conducts its own laundry and sewage disposal. The following is a list of staff: Medical officers, 2; matron, 1; sisters, 6; nurses, 12; engineer, 1; engineer assistant, 1;

stokers, 3; clerical, 2; gardener, 1; porters, 4; orderlies (T.S.), 2; instructors (T.S.), 3; cook, 1; maids, 18; laundry maids, 3.

TUBERCULOUS EX-SERVICE MEN.

THE United Services Fund authorities have recently added to the large number of their beneficent activities by initiating a scheme for the after-care of ex-service men who have suffered from tuberculosis, and whose circumstances are such that they are unable to take an occasional rest from work when the state of their health requires it. They have acquired, in the neighbourhood of Southbourne, Bournemouth, a building known for many years as The Home Sanatorium, and, having added to and adapted it to suit their purposes, have opened it under the name of Douglas House as a convalescent and holiday home for ex-service men who have been treated elsewhere for tuberculosis. It is intended for those who are, or have been, in receipt of pensions for tuberculosis as well as for those whose breakdown was not held to be actually the result of war service The types of cases dealt with are: (1) Men requiring short periods of rest and change whose tuberculous disease is arrested and who have resumed work. (2) Cases which, as the result of recent treatment, have become quiescent. (3) Men whose tuberculous trouble has become quiescent, but who suffer from one or more of the complications of the disease, such as bronchitis or debility. The length of stay in the home depends upon the condition of the patient, but, generally speaking, the aim at present is to fix the period at three weeks, it being realized that men in regular employment do not as a rule wish to be absent longer from their work. Where necessary the period of the stay at the home can be extended. Where a man has a wife or family dependent upon him the Fund will provide a maintenance allowance for them during the man's absence, provided, of course, that the financial circumstances are such to warrant this assistance. Any ex-service man who desires to enter the home should, in the first place, get into touch with his local representative of the United Services Fund, whose address can usually be obtained at the post office, and who will make all the necessary arrangements for the man's admission if the case is accepted.[1] Those in residence now number between fifty and sixty.

The future meetings of the Tuberculosis Society are as follows: January 15, "Tuberculosis of the Central Nervous System," by Dr. Anthony Feiling; February 20, "A Lantern Talk on Pneumothorax," by Dr. Clive Riviere; "The League of Nations Post-Graduate Course," by Dr. W. H. Dickinson. In April a Provincial Meeting will be held in Cambridge. May 22, "Pulmonary Conditions Simulating Tuberculosis," by Dr. Roodhouse Gloyne; June 19, Annual Meeting.[2]

[1] Full particulars regarding the Douglas House Rest and Holiday Home for Tuberculous Ex-Service Men can be obtained on application to the secretary of the United Services Fund, 29, Cromwell Road, South Kensington, S.W. 7.

[2] The ordinary meetings of the Society are held at the House of the Society of Medical Officers of Health, 1, Upper Montague Street, Russell Square, at 8 p.m. on the evenings above mentioned. A copy of the programme and all particulars regarding the aims and work of the Tuberculosis Society may be obtained on application to the Hon. Sec., Dr. F. J. C. Blackmore, 138, Herbert Road, Woolwich, S.E. 18.

NOTICES OF BOOKS.

A GERMAN TREATISE ON TUBERCULOSIS.

Dr. Bandelier and Professor Roepke have just issued a new and greatly enlarged edition of their well-known handbook on Tuberculosis.[1] It is divided into four parts. The first part deals with the history of our knowledge on the subject, and the various accepted or uncertain etiological explanations of the development of tuberculous lesions. Part II. is devoted to pulmonary tuberculosis, its diagnosis, prognosis, treatment, and prophylaxis. In Part III. tuberculous pleurisy and tuberculous pneumothorax are considered; and in Part IV. tuberculosis of the nose, larynx, pharynx, trachea, and large bronchi is discussed. The volume ends with a bibliography and index. Particularly interesting in Part I. is the carefully considered discussion on statistics and data concerning primary tuberculous infections, the paths of infection, and the relative rôles of the human and bovine types of the tubercle bacillus in the various clinical forms of tuberculosis in children and adults. According to these, the bovine type plays a more important part in children in Great Britain than in Germany and other countries. The theories of immunity and reinfection are explained, according to Behring, Römer, Hamburger, and Ranke, with the positions taken up by pathologists such as Aschoff, Hart, and Orth. Of course von Pirquet's idea of "Allergy" is given in regard to the cuti-reaction and similar tests. In Part II. the various diseases which may be associated with, and sometimes influence the course of, pulmonary tuberculosis are separately considered, chiefly from the therapeutic point of view. On p. 595 we notice one mercurial preparation made up with paraffin for intramuscular injection in syphilitic cases. Surely mineral oils should be avoided for intramuscular and subcutaneous injections if possible, since they sometimes give rise to chronic inflammatory "foreign-body tumours." A careful and conscientiously written handbook like the present one is indeed a mine of information and a valuable guide for all physicians and students.

F. Parkes Weber, M.D.

RESPIRATORY AFFECTIONS IN CHILDREN.

Professor Nobécourt has written a suggestive volume on "Clinical Aspects of Diseases of the Respiratory Organs in Children."[2] It is mainly a miscellany of isolated articles and lectures. This

[1] "Die Klinik der Tuberkulose: Handbuch und Atlas der gesamten Tuberkulose für Ärzte und Studierende." By Dr. Bandelier, Chefarzt des Sanatoriums Schwarzwaldheim in Schömberg bei Wildbad; und Prof. Dr. Roepke, Chefarzt der Heilstätte Melsungen, Facharzt für Lungen- und Halskrankheiten in Cassel. Vol. i. of 7th edition; pp. xi + 855, with 86 illustrations in the text and 165 figures on 29 plates. Leipzig: Verlag von Curt Kabitzsch. 1924. Price 29s.

[2] "Clinique Médicale des Enfants. Affections de l'appareil respiratoire." By P. Nobécourt, Professeur de clinique Médicale des Enfants à la Faculté de Médecine de Paris, etc. Pp. 176, with 31 figures. Paris: Masson et Cie. 1924. Price 22 francs.

one might expect from the title, but what is a little surprising is to find whole chapters on such subjects as Rhinitis and Rhinopharyngitis in Scarlet Fever in Infants, Laryngitis in Measles, The Bronchi and Lungs in Typhoid Fever in Infants, Infection of the Respiratory Passages in Whooping Cough, and so forth. These occupy about a third of the volume. Whether this is desirable in a professedly didactic work on respiratory disorders, when students tend far too much already to segregate their knowledge into water-tight compartments, is no doubt a matter of opinion. Personally, I think the method, though perfectly legitimate in an isolated article, is not to be considered desirable in a work of this kind. The chapter on "Broncho-pneumonies sub aigues et chroniques avec Bronchiectasie" is disappointing as regards its advice on treatment. Many drugs are mentioned, including the subcutaneous injection of 1 in 20 huile goménolée. Artificial pneumothorax is touched upon in the briefest manner, but there is no mention at all of any other surgical procedures. The chapters on tuberculosis are very interesting. The author holds that tuberculosis is common in children, that the period of invasion may have no clinical manifestation, and that the diagnosis of early pulmonary tuberculosis in childhood is particularly difficult. Amongst the important symptoms are wasting, anæmia, albuminuria, a sudden burst of rapid growth, perhaps fever, especially the febrile reaction *de promenade*. Cough is considered an inconstant symptom, except in more advanced disease, and hæmoptysis rare. Dr. Nobécourt deals at some length with the diagnosis of tracheo-bronchial adenopathy. The question of finding the tubercle bacillus is discussed, and in default of sputum search is recommended in pharyngeal phlegm, in the liquid from gastric lavage, or in the fæces. The von Pirquet test is viewed as of service in excluding tuberculosis, and interesting cases of non-tuberculous tracheo-bronchial adenopathy are given. Many cases are cited of typical pulmonary tuberculosis of the adult type in children, and it is a great merit of the book that the question of pulmonary tuberculosis in childhood is so fully and ably dealt with. In the chapter on Miliary Tuberculosis of the Lungs, differential diagnosis is dealt with at length. It is surprising to read on page 290 that in the case of a child who died of tuberculous meningitis, "at the autopsy we were surprised to find the lesions of miliary tuberculosis of the lungs which nothing had led us to suspect." Surely tuberculous meningitis must be regarded always as merely part of a generally disseminated miliary tuberculosis. But I do not think the author means quite what this quoted sentence implies; he is concerned more with the difficulty of diagnosis of the actual lung lesions, and of these he says on page 288: "The true means of diagnosing miliary tuberculosis of the lungs is radiography." Sputum, he says, does not exist, the injection of the blood into guinea-pigs very seldom gives any help, but occasionally the inoculation of a guinea-pig by the urine of the patient may give the required proof, and he cites the case of a child of three and a half who, two months after whooping cough, was seized with fever and meningitis. The injection of the urine into a guinea-pig infected it with tubercle. Following a chapter on Whooping Cough and Tuberculosis there are two chapters on asthma which are well worth reading, and which show that we are still far from any absolute knowledge of the etiology and of the treatment.

F. G. CHANDLER, M.D., M.R.C.P.

THE PROGNOSIS OF PULMONARY TUBERCULOSIS.

Dr. Jessen of Davos has written a suggestive monograph on prognosis of pulmonary tuberculosis.[1] In this short notice we can do little more than mention most of the various points discussed by Dr. Jessen as of probable or doubtful value in the prognosis of individual cases of pulmonary tuberculosis. (1) Heredity. He thinks the importance has been much over-estimated in the past. (2) Constitutional factors. (3) Mental character. A phlegmatic person has advantages over one of labile temperament. Psychic shocks may have a very unfavourable effect. The toxæmic condition due to tuberculosis may itself influence the patient's character. (4) The patient's age. The effects of dissemination are better resisted by older than by younger subjects. (5) Rapidity of development of the tuberculous changes, and the results of physical examination of the lungs. (6) Examination of sputum. (7) "Vital capacity," etc. (8) Possible presence of a tuberculous "bacillæmia." (9) Roentgen examination. Smallness of the heart and main arteries, etc. (10) Appearance of "general nutrition," obvious wasting, circumference of abdomen. (11) Tendency to cyanosis of the extremities. (12) A brachial systolic blood-pressure of below 100 mm. Hg in men and 90 mm. Hg in women is unfavourable, though the blood-pressure may of course in some cases be favourably influenced by treatment. (13) Hæmoptysis. The danger of this may be increased by narcotics. (14) The urine. A diazo-reaction, etc., may disappear under treatment. (15) The presence or absence of complications, such as enlargement of the liver, diarrhœa (of various causation), anal fistula, thyroidal enlargement (possibly a favourable symptom), amyloidosis (the appearance of the tongue may be suggestive in that respect), and laryngeal tuberculosis. Sir StClair Thomson's recent Mitchell Lecture (1924) is interesting in regard to this last complication. (16) Signs of vagotonic or sympathico-tonic tendency. (17) Pyrexia and various other toxic signs. (18) Data furnished by modern clinical-pathological examinations, the Arneth method of blood-examination, agglutination and precipitation tests, the "Wassermann tuberculous reaction," the cuti-reaction and tests connected with v. Pirquet's and other ideas on allergy, etc. (19) The influence of other diseases, such as syphilis and diabetes mellitus. For details the original pamphlet must be consulted.

F. Parkes Weber, M.D., F.R.C.P.

THE SURGERY OF PULMONARY TUBERCULOSIS.

Dr. Alfred Brunner has recently published an admirable exposition of the present-day position of the surgical treatment of pulmonary tuberculosis.[2] Brunner, who learnt and worked under Sauerbruch—

[1] "Die Prognose der Lungentuberkulose." By Professor Dr. F. Jessen (of Davos). 1925. (No. 17 of the Tuberkulose-Bibliothek, Beihefte zur *Zeitschrift für Tuberkulose*, edited by Professor Dr. Lydia Rabinowitsch). Leipzig: Verlag von J. A. Barth. Pp. 14. Price 65 Pfennige.

[2] Tuberkulose-Bibliothek: Beihefte zur *Zeitschrift für Tuberkulose*. Herausgegeben von Professor Dr. Lydia Rabinowitsch. No. 13: "Die Chirurgische Behandlung nach den Erfahrungen der Chirurgischen Universitätsklinik München aus den Jahren 1918-1922." By Dr. Alfred Brunner, Privatdozent für Chirurgie, Assistent der Chirurgischen Klinik, München. Mit einem Geleetwort von Geh. Hofrat Professor Dr. F. Sauerbruch. Pp. 375, with 99 figures. Leipzig: Verlag von Johann Ambrosius Barth, 16, Dörrienstrasse. 1924. Price G.M. 17.50.

the greatest of the pioneers in intrathoracic surgery—has combined in this work the knowledge based on the experience of the master with that gained by his own experience in Munich. In order that the results of the cases quoted shall have been proved by time, he deals only with those operated on between the latter end of 1918 and the end of 1922. The opening chapter deals with general pathology and the rationale of collapse therapy. The second chapter is devoted to artificial pneumothorax. The advantages for and against this treatment are given with precision and in detail. Brunner, however, in contradistinction to Neumayer, regards the effusion, which occurs in more than half the cases, with considerable uneasiness; for this reason, he does not advise pneumothorax in early cases. There is a clear description of the technique and complications. "Selective collapse" is not mentioned, because doubtless it is since the period dealt with; but the same does not apply to bilateral pneumothorax, of which no mention is made, nor of the division of adhesions, which is dismissed in a couple of lines on page 125. The third chapter deals with artificial paralysis of the diaphragm. The reason for the repeated failure after simple section of the phrenic nerve is shown to be due to the existence, in 20 to 25 per cent. of cases, of an accessory phrenic, which runs generally with the nerve to the subclavius muscle 3 cm. away from the phrenic. The operations now in vogue are "phrenic evulsion" (Felix) and "radical phrenicotomy" (Goetze). The risks associated with the former are apparently greater in theory only, and it is the operation of choice. By this operation the diaphragm is not only paralyzed, but is raised into the thorax, diminishing the volume of the lung from one-sixth to as much even as one-third. The greatest benefit is obtained in tuberculous invasion of the lower lobe. It is also done for more advanced and more extensive cases in which pneumothorax is impossible; it is of especial value, according to Sauerbruch's teaching, as a preliminary to thoracoplasty in order to test the capacity of the sounder lung to respond to the extra work. The fourth chapter is the most important section of the book. It deals in very extensive detail with extra-pleural thoracoplasty. The reader will find almost everything he can want to know about the historical development, the indications and contra-indications, the various types of operation, the technique, the after treatment, and the results. The results are very fairly divided into three groups according to the chronicity and acuteness of the disease. While in the three groups combined there is an 11 per cent. mortality in the first month, in the first group (the chronic fibrotic unilateral type) this mortality is reduced to 2·85 per cent.; while 74 per cent. of the cases were "healed" or became "free of bacilli." In the fifth chapter, which deals with extra-pleural pneumolysis (apicolysis), the methods of maintaining the artificial extra-pleural collapse of the upper lobe are mentioned, but the technique of paraffin replacement is alone given in detail, together with the complications arising therefrom. It is evident that Brunner is not much enamoured of this method of artificial local collapse; his results certainly are not too encouraging. Where a local collapse is requisite, the author obviously very much prefers rib resection, which obviates the necessity of introducing a foreign body. The sixth chapter, on the surgical treatment of tuberculous pleurisies, is a very interesting one. It deals at great length, and far more completely than I have seen elsewhere, with a complication of pulmonary tuberculosis,

which in general has been somewhat overlooked, and one which there has been a great tendency to regard with insufficient seriousness. While offering a comprehensive survey of the surgery of pulmonary tuberculosis, the author has been at considerable pains to give out of his own wide experience those details and difficulties which are of such value to all interested in the treatment. It is a book to be read not only by every surgeon who practises thoracic surgery, but to be read also by every medical man who undertakes the treatment of pulmonary tuberculosis.

H. Morriston Davies, M.D., M.Ch., F.R.C.S.

THE SURGERY OF BRONCHIECTASIS.

Dr. Guibal, of Paris, has written a thoroughly practical and useful little handbook on bronchiectasis,[1] one of a series of similar brochures. In a disease so distressingly progressive any mitigation would be welcome. Beyond the ancient remedy of creosote and the more modern methods of posture, unfeasible intrabronchial injections, and artificial pneumothorax the physician can do little, and he is more than glad to co-operate with the surgeon if he can be offered a treatment that is not attended by too desperate a risk. Artificial pneumothorax, as the author points out, may be the treatment of choice in some cases, but in many others it is unsatisfactory or impossible to perform. Moreover, it is not a radical treatment. Dr. Guibal deals with the various procedures which have been suggested under the following headings: (1) Those directed towards collapsing the lung: (*a*) artificial pneumothorax; (*b*) stripping the parietal pleura and compressing the lung by fat, or Beck's paste, or a rubber balloon, or a sponge, etc.; (*c*) Thoracoplasty, with or without phrenicotomy. (2) Pneumotomy and drainage. (3) Ligature of the vessels of the hilum. (4) Partial pneumectomy or lobectomy, which he calls radical treatment in selected cases. Each one of these is dealt with briefly in a shrewd and practical fashion, the indications for and against each procedure in different types of bronchiectasis being clearly set forth. There is no escaping the fact that the author considers lobectomy the treatment *par excellence* in selected cases, but he is careful to define the basis of selection. This is a limited, unilateral unilobular bronchiectasis in a patient not over thirty-five, and who has no other obvious contra-indications to operation such as amyloid disease, myocardial degeneration, and so forth. He gives in detail the technique of the operation, and insists on two fundamental rules—the first, that the operation must be done in two stages; the second, that lobectomy must never be performed if the two layers of the pleura are not adherent, for fear of fatal infection of the pleural cavity. If the pleura is not adherent, this must be made so in a manner indicated, and the operation completed at a third stage. The anæsthesia of choice he considers to be spinal anæsthesia. He does not minimize the risk of the operation, nor seek to disguise the fact that the mortality is formidable, and he states on page 115 that the patient must take his part in the responsibility of the

[1] "Traitement Chirurgical de la Dilatation Bronchique." By P. Guibal (de Béziers), Ex-Interne des Hôpitaux de Paris. Membre correspondent de la Société de Chirurgie. Pp. 176 with 31 figures and schemes. Paris: Masson et Cie, 120, Boulevard Saint-Germain. 1924. Price 10 francs.

decision. This, of course, is the great difficulty in all major chest surgery, and until the fatal accidents that are all too common can be prevented, such work will continue to have a limited value and its progress will be hindered. This book attempts to show how some of the fatal complications can be prevented; and doubtless as technique becomes perfected the mortality will be considerably lessened. There are several minor points of interest in the book, one being the description of the diagnostic value of intratracheal injection of huile iodée or lipiodol, another his deprecation of the combined method of pneumothorax and partial thoracoplasty, which is undoubtedly a tempting proposition at times. In short, in spite of an æsthetic antipathy to the cover, I found in the pages within much that was interesting and helpful.

F. G. CHANDLER, M.D., M.R.C.P.

ULTRA-VIOLET RAYS.

DR. PERCY HALL has provided a condensed, concise, informing, up-to-date handbook on the employment of Ultra-Violet Rays in the Treatment of Disease.[1] It is just the book for the busy medical adviser anxious to keep abreast with rapidly progressing knowledge regarding heliotherapy and actinotherapy and the appliances for and conduct of treatment by ultra-violet radiation. Certainly all tuberculosis officers and others dealing with tuberculosis should study this excellent little work. It opens with a short historical introduction, and then come chapters on the use of sunlight heliotherapy, artificial light, and ultra-violet radiation. The chief value of the book depends on the excellent description of the various sources now available for the production of ultra-violet light and the technique for application. A special chapter is devoted to the consideration of ultra-violet radiation in pulmonary tuberculosis and catarrhal conditions of the respiratory tract. Sir Henry Gauvain and Professor Leonard E. Hill provide sympathetic introductions to Dr. Hall's admirable handbook.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

DR. WALTERS'S practical guide to the home management of consumptives[2] was first published in 1921, and the speedy appearance of a second edition affords striking evidence that the work has been appreciated. It is a particularly serviceable handbook for the general practitioner, but it is also full of wise and helpful suggestions which tuberculosis officers will do well to consider. The volume consists of twenty-one chapters, giving detailed information, explicit instructions, and fundamental data relating to home conditions, rest and open air

[1] "Ultra-Violet Rays in the Treatment and Cure of Disease." By Percy Hall, M.R.C.S., L.R.C.P. With an Introduction by Sir Henry Gauvain, M.A., M.D., M.C., and Leonard E. Hill, M.B., F.R.S. Pp. xvi+110, with illustrations. London: William Heinemann (Medical Books), Ltd., 20, Bedford Street, W.C. 2. 1924. Price 7s. 6d. net.

[2] "Domiciliary Treatment of Pulmonary Tuberculosis." By F. Rufenacht Walters, M.D., B.S., M.R.C.P., F.R.C.S., Medical Director Crooksbury Sanatorium. Second edition. Pp. xi+288. London: Baillière, Tindall and Cox. 1924. Price 7s. 6d. net. A review of the first edition appeared in this journal in the number for January, 1922, p. 35.

treatment, ventilation, cleanliness, precautions against infection, pyrexia and its treatment, dietetics, general and specific remedies, graduated exercises, recreation and occupation, after-care, industrial considerations, co-operation. Within the limits of a comparatively small volume Dr. Walters has succeeded in compressing practically all the essential knowledge for a general medical adviser called upon to care for a consumptive patient in his own home. The new edition is provided with an excellent introduction, and in an additional chapter the public and social relations of home treatment are discussed. Such a book as this is needed, for wide differences of opinion and practice still exist in regard to measures desirable for the prevention and arrest of tuberculosis, and in general practice there are oftentimes grievous sins of omission and commission. As the author says: "It seems a pity that we should not make a more intelligent use of the many excellent remedies and methods of treatment which we already possess." And Dr. Walters in concise, lucid, scientific form sets out the way of righteousness and sound common sense.

Professor Still's fine volume on the "Disorders and Diseases of Childhood" after an interval of eight years has reached its fourth edition.[1] It is no ordinary textbook, but occupies a place which is practically unique in pediatric literature. The work is in the main based on lectures, and is almost entirely an expression of the author's experience and personal studies, and thus is peculiarly helpful to all classes of medical advisers called to deal with children. Tuberculosis officers under existing conditions of service have to deal with considerable numbers of young subjects, and we would particularly commend to them a study of Dr. Still's comprehensive work. The sections dealing with tuberculosis are excellent, and present a view of the disease in childhood which is judicious, reliable, and really helpful. Suggestions are made regarding climatic stations in this country and in France and Italy; but there is no mention of Leysin or Dr. Rollier's famous school in the sun, which is now frequented by children from this and many other lands. No expression of opinion regarding the value of heliotherapy and ultra-violet rays is to be found. A particularly informing chapter is devoted to abdominal tuberculosis, and a further chapter deals with tuberculous glands of the neck. Tuberculous meningitis has a chapter to itself. The series of sections dealing with tuberculosis furnishes an almost complete account of the more important forms of "medical" tuberculosis in early life. The volume is one of the "Oxford Medical Publications," and is admirably got up. It is dedicated to Sir Thomas Barlow.

The problems of pregnancy are of interest to the student of tuberculosis, for frequently immediately after confinement many young women flare up with a rapidly progressive pulmonary tuberculosis. The new work of Drs. de Wesselow and Wyatt on the "Toxæmias of Pregnancy" is not only a suggestive one, but affords just that comprehensive survey which will be of particular service to the general practitioner.[2] The volume opens with an account of our present-day

[1] "Common Disorders and Diseases of Childhood." By George Frederic Still, Professor of Diseases of Children, King's College, London, etc. Fourth edition. Pp. xvi+965, with 73 figures. London: Humphrey Milford, Oxford University Press. 1924. Price 25s. net.

[2] "Modern Medical Monographs." Edited by Professor Hugh MacLean, M.D., D.Sc. "Modern Views on the Toxæmias of Pregnancy." By O. L. V. de Wesse-

knowledge regarding the toxæmias of pregnancy, and methods of examination utilized in their investigation, and a summary of the features of normal pregnancy. Then follow chapters on Hyperemesis Gravidarum, Eclampsia, Nephritic Toxæmia, with sections on the Treatment of Pre-Eclampsia and Eclampsia, the Examination of Cases of Albuminuria in Pregnancy, and the Ultimate Prognosis in Cases of Toxæmia associated with Pregnancy. The work is timely and helpful, for the authors have compiled and compressed information scattered through many papers, and although the conclusions are mainly provisional, they afford a starting-point for further exploration. It is certainly a book which tuberculosis officers and others having to deal with tuberculous pregnant women should not fail to study.

Venereal disease is not infrequently met with in tuberculous subjects, and it is essential that the tuberculosis officer should be fully acquainted with up-to-date methods for the diagnosis and treatment of such cases. In the serviceable series of "Modern Medical Monographs," edited by Professor Hugh MacLean, is an excellent handbook on venereal disease by Colonel Harrison.[1] It provides busy practitioners with a reliable guide to present-day knowledge in an assimilable form, and will enable the three main venereal diseases to be accurately recognized and adequately dealt with. The author has some helpful suggestions regarding the differential diagnosis of syphilitic and tuberculous ulcers in the mouth. The latter "is formed by the breaking down of small tuberculous nodules, which can be seen in the neighbourhood of the ulcers like sago grains in the mucous membrane. The deeper tuberculous ulcer is usually associated with severe tuberculosis of the lung. It is more irregular than the gummatous ulcer, with undermined edges, and, unlike the tertiary lesion, is very painful." With regard to the rectum, it is shown that "syphilitic ulceration of the rectum is distinguished from tuberculous ulcer by its more sharply-cut edge, and by the infiltration of the surrounding tissue. Also, the patient may appear healthier, and the serum reaction may assist." The handbook is thoroughly practical. There is a good coloured frontispiece.

Chemistry, especially on its physical side, has within the last few years gone far to revolutionize conceptions, methods, and teaching in the realms of physiology, bacteriology, and those allied branches of biological science which provide a basis for the science and art of medicine. Professor Findlay of Aberdeen has provided a work which, while manifestly intended mainly for present-day medical students, deserves the serious consideration of all who desire to keep abreast of modern views in relation to physical chemistry, particularly in regard to its connection with the medical sciences.[2] The volume consists of a

low, M.B. (Oxon), F.R.C P., Chemical Pathologist, St. Thomas's Hospital; and J. M. Wyatt, M.B. (Lond.), F.R.C.P., Obstetric Physician in charge of Out-Patients, St. Thomas's Hospital. Pp. vii + 99. London: Constable and Co., Ltd., 10 and 12, Orange Street, Leicester Square, W.C. 2. 1924. Price 7s. 6d. net.

[1] "Modern Diagnosis and Treatment of Syphilis, Chancroid, and Gonorrhœa." By L. W. Harrison, D.S.O., M.B., Ch.B., M.R.C.P.E., Brevet-Colonel R.A.M.C., Director of the Venereal Department, St Thomas's Hospital. Pp. viii + 167, with coloured plate and 7 illustrations. London: Constable and Co., Ltd. 1924. Price 10s. 6d. net.

[2] "Physical Chemistry for Students of Medicine." By Alexander Findlay, M.A., D.Sc., F.I.C., Professor of Chemistry, University of Aberdeen. Pp. ix + 227, with 39 figures. London: Longmans, Green and Co., 39, Paternoster Row, E.C. 4. 1924. Price 8s. 6d. net.

dozen chapters in which are described and discussed the Gas Laws, the Aqueous Milieu of the Life Processes, Diffusion and Osmotic Pressure, Osmotic Pressure in the Living Organism, the Behaviour of Electrolytes in Solution, the Law of Mass Action and Chemical Equilibrium as applied to Solutions of Electrolytes, Hydrion, Velocity of Reaction and Catalysis and Enzyme Action, the Colloidal State, Adsorption and the Permeability of the Cell Membrane. The book is effectively printed and admirably arranged.

The problem of tuberculosis is closely associated with the question of housing. Some patients are able to plan and build their own houses on such hygienic and artistic lines as enable ordinary domestic life to be carried on with benefit to the patient and without danger to his family. To all who desire to construct a convenient, sanitary, pleasing, and not too expensive a homestead we commend a consideration of Mr. Phillips's informing and suggestive new book.[1] It provides descriptions with illustrations and plans of a number of houses well suited to meet the requirements of a small family, and in most instances some estimate of probable cost is provided. The work is most artistically produced, as one might expect in a volume prepared by the editor of *Homes and Gardens*.

Increasing attention is being devoted to the investigation of the blood in disease. A comprehensive study of the subject from the standpoint of clinical medicine has recently been written by Dr. de Wesselow.[2] Starting with an exposition of the chemical composition of the normal blood, the author, in a series of lucidly written, well-arranged, and thoroughly practical chapters, deals with acidosis and alkalosis; variations of the blood-sugar in health and disease; blood-states in nephritis, tetany, rickets, and gout; hydræmia and anhydræmia; the fats and lipoids of the blood in morbid conditions; and anoxæmia. In the concluding chapters reference is made to the ferments of the blood, chemical changes in the blood of patients suffering from malignant tumours, the blood in the toxæmias of pregnancy, and various methods for clinical investigation of blood-states. At the end of each chapter is a select bibliography. We trust that in the next edition a study of blood-states in tuberculosis may be included. Dr. de Wesselow has accomplished a notable service in having brought together from many sources valuable information, and expressed it in a form likely to be of assistance to biochemists and clinical pathologists engaged in the investigation of individual cases of blood disorders.

"The Extra Pharmacopœia of Martindale and Westcott"[3] is an indispensable treasury of up-to-date information which medical advisers,

[1] "Small Family Houses." By R. Randal Phillips, Hon. A.R.I.B.A. Pp. 159, with 145 figures. London: *Country Life*, Ltd., 20, Tavistock Street, Covent Garden. 1924. Price 10s. 6d.

[2] "The Chemistry of the Blood in Clinical Medicine." By O. L. V. de Wesselow, M.B. (Oxon), F.R.C.P., Chemical Pathologist and Physician to Out-Patients, St. Thomas's Hospital, London. Pp. 255. London: Ernest Benn, Limited, 8, Bouverie Street, E.C. 4. 1924. Price 15s. net.

[3] "The Extra Pharmacopœia of Martindale and Westcott." Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Eighteenth Edition. In two volumes. Vol. i., pp. xxxviii+1163. London: H. K. Lewis and Co., Ltd., 136, Gower Street, W.C. 1. Also obtainable from Wm. Martindale, Manufacturing Chemist, 10, New Cavendish Street, W. 1. 1924. Price 27s. 6d., post free 28s.

pharmacists, analysts, and all who deal in any way with drugs and therapeutic agents should always have within reach for reference. The last edition of this much used and justly valued unique work appeared in 1920, and since then the authors have been indefatigable in bringing their work abreast of the times. They have developed rare skill in the collection and presentation in concise, serviceable form of data relating to all modern medicinal chemicals, drugs, organotherapeutic agents, vaccines, antitoxins, etc. The volume before us contains an immense amount of new information relating to such agents as aspriodine, sedasprin, "activated" alkaloids, arsenic preparations, alkali bismuth tartrates, various coal tar derivatives, colloids, accessory food factors, and chaulmoogra oil. Physicians will find the section dealing with the Dangerous Drugs Acts of much value. The Therapeutic Index of Diseases provides the medical adviser with a particularly convenient means for securing rapidly valuable suggestions and reminders. The General Index is a monument of orderly arrangement. There is much in the volume which will be of special value to tuberculosis officers. There are particulars regarding the various forms of tuberculin, including Dreyer's "Diaplyte," information as to the continuous antiseptic inhalation treatment of pulmonary tuberculosis, reference to the Tuberculosis Notification Order, and many opinions and data bearing on the pathology, diagrams, and treatment of tuberculosis. The work is a treasury of facts and suggestions which certainly every doctor should possess.

Dr. H. R. Harrower in his new pocket manual on "Pluriglandular Therapy"[1] strongly advocates the use of Endocrines in tuberculosis. He holds that the toxæmia often met with in tuberculosis overstimulates, and consequently depletes, the adrenal glands, and he dogmatically declares that "hypoadrenia is an invariable concomitant of tuberculosis in every stage" When considering parathyroid organotherapy he claims that tuberculous cases are usually "lime starved." The administration of Parathyroid Co. (Harrower) over a period of three months and supplemented by injections on alternate days of Sol. Para-Spleen Co. (Harrower), is said to give encouraging results. A special chapter is devoted to the discussion of "Nutritional Control in Tuberculosis," in which Dr. Harrower's article on "The Adjunct Treatment of Tuberculosis with Certain Organic Extracts," which appeared in this journal in 1913 (Vol. VII., No. 3, p. 170), is referred to. Dr. Harrower describes some interesting observations on rabbits in which the administration of spleen nucleoprotein solutions gave rise to a marked increase in the blood calcium. Dr. Harrower contends that tuberculosis is rarely a monovalent infection—"at least not when the tuberculous focus has come in contact with the outer air (so-called open tuberculosis), for in that case, invariably there is present an associated mixed infection with a number of other micro-organisms, all of which exert their particular detrimental effects upon the tuberculous organism and really cause the 'consumptive' stage of the disease." And so it can be said that "tuberculosis is not so much an infectious disease as a nutritional disorder." Dr. Harrower's views on the value of organotherapy in tuberculosis as here expressed deserve unprejudiced consideration and full investigation.

[1] "A Manual of Pluriglandular Therapy." By Henry R. Harrower, M.D., Founder and Director of the Harrower Laboratory. Pp. 288. London: Endocrines, Ltd., 72, Wigmore Street, W. 1. 1924. Price 5s.

The Report of the Medical Research Council just issued is a volume of exceptional interest and value, and contains much of special service to students of the tuberculosis problem.[1] There are records of bacteriological and serological studies on tuberculosis, the pathology of tuberculous infection, diagnosis and treatment, vaccine therapy, tuberculin, chemotherapy and statistics, and after-histories. The sections dealing with the Biological Actions of Light are of particular importance. We quote the following regarding exposure of the skin of man and animals to ultra-violet light and other forms of radiant energy: "The rays from a carbon arc, or a mercury vapour lamp, as well as certain heat rays, were found to raise the bactericidal efficiency of the subject's blood, this effect being referable to improved functions of the leucocytes. A similar improvement in the blood was found to occur after exposure to the Alpine sun in winter. It is suggested that this enhanced power of the blood to kill microbes plays an important part in the beneficial action of sunlight upon tuberculosis and other infections. In conformity with clinical experience it has been found by experiment that irradiation for purposes of treatment must be carefully graded, since excessive exposures cause a deterioration of the blood no less striking than the improvement obtained with smaller doses."

"Studies from the Rockefeller Institute"[2] continue to reach us in rapid succession. Vol. xlix. is a handsome volume containing reprints of forty-one important articles mainly records of original research, and including communications from Dr. Simon Flexner on "Epidemic (Lethargic) Encephalitis and Allied Conditions," Dr. Alexis Carrel on "Leucocytic Trephones," Dr. Glaser on "The Effect of Food on Longevity and Reproduction in Flies." Several of the papers are illustrated.

The second annual issue of "The Medical Year Book" has just been published.[3] This new reference work has won immediate popularity, and deservedly so. The plan and purpose of the volume and the manner of execution all merit praise. The book should be in the possession of every doctor, and have a place in every library and club. Mr. Hewitt's Year Book is a veritable medical Whitaker, a complete "Enquire Within" on all matters relating to the personal and public services of medicine, and an authoritative guide to the activities of the profession.

[1] Committee of the Privy Council for Medical Research: "Report of the Medical Research Council for the Year 1923-1924." Pp. 142. London: His Majesty's Stationery Office. 1924. Price 3s. 6d. net.

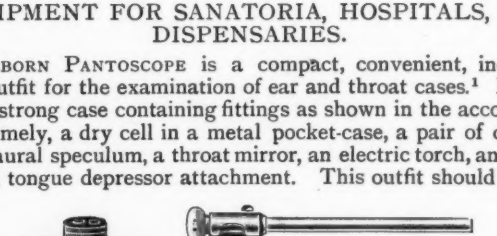
[2] "Studies from the Rockefeller Institute for Medical Research." Reprints, vol. xlix., pp. 603. New York: The Rockefeller Institute for Medical Research. 1924.

[3] "The Medical Year Book and Classified Directory, 1925." Edited by Charles R. Hewitt. Pp. 612. London: William Heinemann (Medical Books), Ltd., 20, Bedford Street, W.C. 2. Price 12s. 6d. net.

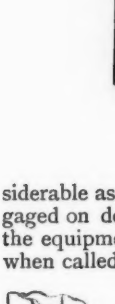
PREPARATIONS AND APPLIANCES.

EQUIPMENT FOR SANATORIA, HOSPITALS, AND DISPENSARIES.

THE HOLBORN PANTOSCOPE is a compact, convenient, inexpensive, portable outfit for the examination of ear and throat cases.[1] It consists of a neat, strong case containing fittings as shown in the accompanying figure—namely, a dry cell in a metal pocket-case, a pair of connecting cords, an aural speculum, a throat mirror, an electric torch, and a second torch with tongue depressor attachment. This outfit should be of considerable assistance to all tuberculosis officers, and especially when engaged on domiciliary service. Medical practitioners generally will find the equipment invaluable. Specialists will also appreciate this outfit when called to undertake country visits.



THE HOLBORN PANTOSCOPE.

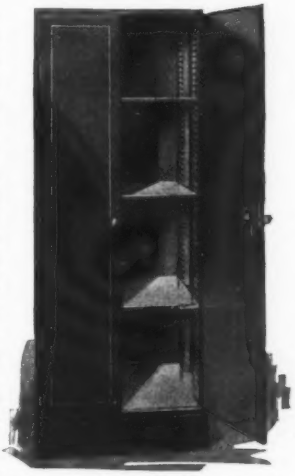


THE BRADBURY BOOKCASE.

Books are the solace of most patients. Consumptive and other tuberculous patients usually find in reading their chief recreation and comfort. No companions are more welcome than the friends who encourage patients through the pages of the right sort of books. In the home, the hospital, the sanatorium, the open-air school, the hygienic settlement, books should always be available. A particularly neat, strong, and generally attractive and serviceable bookcase suited for the requirements of patients, and indeed likely to be approved by all lovers of books, is shown in the accompanying figure. The BRADBURY BOOKCASE is constructed of well-seasoned hardwood, stained and polished, and providing space for from sixty to ninety books.[2] It stands 3 feet 9½ inches high and 1 foot 3 inches wide, and is supplied at an exceptionally low price.

[1] The Holborn Pantoscope is supplied by the Holborn Surgical Instrument Company, Ltd., 26, Thavies Inn, Holborn Circus, E.C. 1. Price, complete in case, 15s.; spare batteries, 6d.; and spare bulbs, 6d.

[2] The Bradbury Bookcase is manufactured by Greenlands Limited, Foley Works, Hereford, in two grades and several sizes. The form illustrated above is sent carriage paid to any address in this country for 20s.



THE SANKEY-SHELDON STEEL CUPBOARDS.

STEEL CUPBOARDS are becoming very popular, and justly so, for home and business purposes. The Sankey-Sheldon steel furniture is specially suited for use in hospitals, sanatoria, and dispensaries, and in connection with open-air schools.[1] The cupboards are durable, inexpensive, and afford protection against fire, damp, dust, and vermin. The accompanying figure indicates one of the forms which is particularly satisfactory for sanatorium service. The shelves are movable, and it has a door which is reinforced and locked by a first-grade Chubb lever lock, and is supplied with duplicate keys. The cupboard has a pleasing appearance, being coated with baked-on green enamel.

HOT-WATER BOTTLES are essential for maintaining the warmth and comfort of tuberculous patients undergoing open-air treatment. The most convenient forms are those composed of rubber, and Messrs. Boots are supplying an admirable series which are splendid, not only for sanatorium service, but for use in all hospitals and also for home treatment.[2] "The Primus" is intended for those requiring an inexpensive form which will be strong and reliable. "The Cumfy" is of medium price, has a warm, attractive appearance, and is generally popular. "The Regaid" is a superior bottle, scientifically moulded, made all in one piece, and is reinforced by a special canvas lining. All these rubber bottles are of excellent workmanship, and for the maintenance of health in the sound and the restoration of strength in the sick they are strongly to be commended.

THE CARIBONUM STAMP PAD is an ideal form of appliance for the ready, clean, effective inking of all kinds of rubber stamps now so much used in hospital and professional work.[3] The pad is made of reliable materials; the ink is excellent, and can be supplied in black, blue, violet, green, or red colours, the cover of the case being that of the ink within. The general form and projecting flange of the pad case is such that it can be opened and used without risk of soiling the fingers.

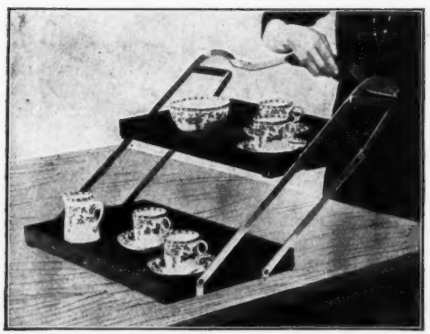
Under the general designation of SILENTIA an excellent form of rubber flooring is now available for hospitals, sanatoria, and dispensaries, as well as for private homes and public buildings. It is silent, non-slipping, sanitary, resilient, durable, and economical.[4]

[1] Full particulars regarding all forms of the Sankey-Sheldon Steel Furniture can be obtained from Harris and Sheldon, Ltd., 46, Cannon Street, E.C. 4.

[2] Full particulars regarding the Boots' Rubber Hot-Water Bottles may be obtained on application to Boots, Station Street, Nottingham, or any of the Boots' depots.

[3] The Caribonum Stamp Pad is manufactured by Caribonum Limited, Leyton, E. 10, from whom full particulars and prices can be obtained on application.

[4] Full particulars regarding the various varieties of Silentia Rubber Flooring can be obtained from the sole agents, F. McNeill and Co., Ltd., 14-24, Lamb's Passage, Bunhill Row, E.C. 1.



THE KWIK-WAY SERVICE TRAY.

THE KWIK-WAY SERVICE TRAY is a novelty which will be welcome in many homes and institutions, and particularly where delicate folk, invalids, and actual patients have to be waited upon and considered.[1] The principal features of this ingenious, portable, labour-saving double tray are indicated in the accompanying illustrations. For arrangement it is placed flat on the kitchen table, and then on lifting the handle it locks, and, becoming rigid, can be carried anywhere. The trays are of oak, while the frame is of aluminium.

For sanatoria the "Lloyd-Loom Products" are excellent. They are now being produced in this country as woven wicker-work furniture, which will be found artistic and serviceable for sanatoria, open-air schools, and like institutions.[2]

[1] The Kwik-Way Service Tray is manufactured by C. Downing and Sons, Ltd., 61, London Road, Southwark, S.E. 1 (near the Elephant and Castle). The price of the two-tier tray, 18 × 18 inches, is 15s. 6d., or 12 × 20 inches, 17s. 6d., carriage free to any address.

[2] The Lloyd-Loom Woven Furniture is manufactured by W. Lusty and Sons, Bromley-by-Bow, E. 3, from whom an illustrated catalogue can be obtained on application.

THERAPEUTIC AND HYGIENIC SPECIALITIES.

THE POLYCRINES or preparations for the conduct of endocrine therapy in the form of concentrated sterile solutions suitable for hypodermic injection, introduced by Endocrines Limited, are meeting with much favour.[1] The SOLUTION PARA-SPLEEN CO., which is a standardized 4 per cent. solution of nucleoproteids from spleen and parathyroids, is being used with apparent advantage in many cases of tuberculosis.

TONOPHOSPHAN is a new preparation introduced at the suggestion of Professor Blum, Director of the Biological Institute at Frankfort-on-Maine.[2] It is a phosphorus compound in combination with carbon, and appears to have a stimulant action on metabolism. It has been used with advantage in rickets and in various orthopædic cases where bones and joints have been involved, and in tuberculosis encouraging results have been obtained. The preparation is provided in 0·5 and 1 per cent. solutions, put up in sterile ampoules ready for subcutaneous injection.

SYRUP CRÉOSAL (Dubois) is an elegant, palatable, and particularly effective French preparation of pure monoguaiaco-phosphate of calcium.[3] Créosal is said to have none of the unpleasant effects which sometimes follow the taking of guaiacol. It certainly seems to be of much service in various forms of bronchial and pulmonary disorder, and has been used extensively and with advantage in many cases of tuberculosis.

PILL ALOPHEN is a new and effective laxative containing aloin, belladonna, strychnine, ipecacuanha, and phenolphthalein in chocolate-coated form, which is likely to be of special service for certain tuberculous and other delicate subjects.[4]

A Fountain Pen is an indispensable companion for every doctor, nurse, and patient. It is particularly necessary for all who are undergoing hospital or sanatorium management, living an open-air life, or seeking health by travel. For many years we have constantly used a WATERMAN FOUNTAIN PEN, and with the greatest satisfaction.[5] It is an inseparable partner in all endeavours requiring pen and ink, and is a reliable, tireless, true helpmeet. A Waterman becomes a part of one's personality. This justly popular and invaluable instrument of modern civilization is available in various forms and with gold iridium pointed nibs suited to all styles of handwriting. A Waterman pen is a

[1] Full particulars regarding the use of endocrines in tuberculosis will be found in "A Manual of Pluriglandular Therapy," by Henry R. Harrower, M.D., Founder and Director of the Harrower Laboratory at Glendale, California, and published in this country by Endocrines, Limited, 72, Wigmore Street, W. 1 (price 5s.), from whence full particulars regarding Solution Para-Spleen Co. (Harrower) and the other Harrower polycrines can be obtained on application.

[2] Tonophosphan is manufactured by Leopold Cassella and Co. at Frankfort-on-Maine, and particulars and samples can be obtained on application to Thos. Christy and Co., 4-12, Old Swan Lane, Upper Thames Street, E.C. 4.

[3] Syrup Créosal (Dubois) is made in the Laboratories Laleuf, 49, Avenue de la Motte-Picquet, Paris, XV^{e}; and is supplied in this country by the Anglo-French Drug Company, Ltd., 238A, Gray's Inn Road, W.C. 1.

[4] Pill Alophen is manufactured by Parke, Davis and Co., 50, Beak Street, Regent Street, W. 1, from whom specimens and particulars can be obtained.

[5] "The Pen Book," issued from the Pen Corner, Kingsway, W.C. 2, by L. G. Sloan, Ltd., gives full particulars regarding all forms of the Waterman Pen, and will be sent on application to any reader of this journal.

present which can be sent easily by post anywhere. As a gift for a medical adviser or a souvenir for a sick friend or patient the Waterman is always a peculiarly acceptable gift.

GADUS JELLY will be welcomed by those who dislike cod-liver oil in its ordinary forms.[1] It is manufactured in England from oil made in the Lofoten Islands. It is made from pure cod-liver oil free from all oxidation products and bodies giving rise to the customary obnoxious properties. In the preparation of this jelly every care has been taken to preserve the "A" vitamines, as in the majority of emulsions and other preparations of cod-liver oil on the market these valuable agents are largely, if not entirely, destroyed. In the treatment of tuberculosis this preparation will be of great value.

Many smokers when coming under medical care for tuberculosis, and having to comply with the regimen of a sanatorium, greatly resent any interference with their enjoyment of pipe or cigarette. And yet the nature and dosage of tobacco to be allowed is a matter which calls for consideration and sound advice. Patients permitted to smoke must indulge in reliable and safe brands. Among the best forms of cigarettes which receive medical approval are the specialities manufactured by the world-famous firm of Abdulla.[2] Greatest care is taken in the selection and maturing of the tobacco, the preparation of a pure paper, and the scientific supervision of all conditions under which the manufacture is carried on. The Abdulla Cigarettes, whether Virginian, Egyptian, or Turkish, are of first-class workmanship, and can be supplied in mild forms specially suited to the requirements of delicate and tuberculous patients.

At this season of the year gardeners and all responsible for the care of orchards and gardens and ornamental drives and paths connected with sanatoria and open-air schools will do well to study the excellent illustrated Lists of Rose Trees and Flowering Shrubs, Fruit Trees and Flowers, issued by Messrs. R. Harkness and Co. of Hitchin. Specimens of the Harkness Roses may be seen this coming season at the Children's Sanatorium, Harpenden, Herts.[3]

[1] The "Gadus Jelly" is supplied in this country by the Heyerdahl Products Company (England), Ltd., 36, Regent Street, Cambridge. The factory is in the Lofoten Islands, and the laboratory is at 95, Ruselokbasaren, Kristiania, Norway.

[2] Full particulars of the Abdulla specialities can be obtained on application to Abdulla and Co., Ltd., 173, New Bond Street, W. 1.

[3] Copies of the Harkness illustrated price lists will be sent to any reader of this journal on application being made to R. Harkness and Co., The Rose Gardens, Hitchin, Herts.

THE OUTLOOK.

OPEN-AIR SCHOOLS.

SIR GEORGE NEWMAN, in his recently published Annual Report as Chief Medical Officer of the Board of Education, devotes a chapter to the Open-Air Recovery School, of which there are now forty for day scholars and twenty for residential cases, providing for a total of 4,690 children.[1] Particulars are set out regarding the organization and conduct of an open-air school. The following are enumerated as cases best suited for open-air schools: (1) Children suffering from malnutrition, rickets, anæmia. (2) Delicate children living in the same house as a notified consumptive. (3) Children with tuberculous glands in the neck. (4) Children convalescent after debilitating diseases such as pneumonia, measles, whooping-cough, etc. (5) Children convalescent after operations for adenoids, glands in the neck, etc. (6) Children suffering from blepharitis and other chronic non-infectious eye diseases associated with malnutrition. (7) Certain types of crippled children. (8) Nervous and highly strung children. (9) Myopic children requiring special educational provision.

HELIOTHERAPY AND PULMONARY TUBERCULOSIS.

Drs. Horace Lo Grasso and Frank C. Balderrey have recently published an important article on the treatment of pulmonary tuberculosis by heliotherapy.[2] The following are the authors' conclusions: (1) Heliotherapy is of the greatest value in the treatment of pulmonary tuberculosis, one of the most marked benefits noted being the striking improvement in the general physical condition. (2) The blood picture is improved, as is evidenced by an increase in hæmoglobin, a diminution in the leucocytosis and a corresponding increase in the lymphocytes. (3) It lessens the activity of the pulmonary lesion, as indicated by the subsidence of fever, reduction in pulse-rate, decrease in moisture, cessation of night sweats, decrease in amount of sputum and greater ease in expectoration. (4) It greatly favours the absorption of exudates as in pleurisy with effusion, hydropneumothorax and pyopneumothorax, in which complications after the acuteness has subsided heliotherapy has proved of inestimable value. (5) It is the treatment of choice in so-called surgical tuberculosis or, better, extrapulmonary tuberculosis. (6) It changes the mental attitude of the patient, and facilitates his recovery by making his treatment a pleasure rather than a distasteful necessity. But, while we admit the psychic effect as a factor not to be ignored, we do not, like some observers, attribute to it the entire benefit of heliotherapy, but insist that one must also accept the physical

[1] "The Health of the School Child," Annual Report of the Chief Medical Officer of the Board of Education for the Year 1923. Pp. 194. London: H.M. Stationery Office, 1924. Price 2s. net.

[2] Lo Grasso, H., and Balderrey, F. C.: "Heliotherapy in the Treatment of Pulmonary Tuberculosis," *The American Review of Tuberculosis*, vol. x., No. 2. New York: National Tuberculosis Association, 370, Seventh Avenue.

response of the individual. (7) According to our experience heliotherapy will not provoke hæmoptysis, increase the activity of a lesion, or reactivate it if judiciously employed. (8) Moderate elevations of temperature, not due to acute complications, do not preclude its use, but we recognize as contra-indications tuberculosis in the very active stage, marked toxæmia and the acute miliary form of the disease. (9) Irradiation periods during the summer should be as early in the morning and late in the afternoon as is possible, as at this time the sun's energy is less intense, and the chances of complications are reduced to a minimum. On the other hand, during spring and fall, the hours at the middle of the day should be chosen, as they resemble most closely the early and late hours of a summer day. (10) Artificial light therapy as it has been employed, with sources deficient in portions of the solar spectrum and total radiation, and under entirely different conditions from suncure, cannot compare with heliotherapy. At its best it is only a poor substitute for solar energy.

THE ALEXANDER SPENGLER MEMORIAL AT DAVOS.

NOTES AND RECORDS.

Davos, the famous Swiss health resort for tuberculous subjects, owes its discovery and much of its development to the late Alexander

Spengler.[1] A monument of this pioneer and able physician has recently been placed in the Public Gardens at Davos. The figure represents an undraped, deep-breathing, vigorous man, symbolic of the health-renewing features of life at Davos.[2]

The Ministry of Health have issued under the head of "Treatment of Tuberculosis" a table, extending over thirteen pages, showing under various heads the cost per patient per week at certain institutions for the treatment of tuberculosis during the year ending March 31, 1924.[3] The Ministry of Health have issued regulations for the purpose of preventing infection from the employment in and about farms, dairies, etc., of persons suffering from pulmonary tuberculosis.[4] The Ministry of Health have also just issued Circular 549 relating to notifications under the Public Health (Tuberculosis) Regulations, 1912 and 1921.

In view of the general importance of town planning not only to local authorities and their officials, but also to private interests concerned in the development of land, the part of the Annual Report of the Ministry of Health for 1923-24 which deals with this subject has been published separately. The report contains a statement regarding the position of town-planning schemes throughout the country at the end of the year and the progress of regional planning, and also as to the attitude of the Ministry on a number of points of general importance which have arisen in connection with town planning and with appeals relating to proposed developments.[5]

Medical officers, tuberculosis officers, and other medical advisers will be wise to secure copies of the admirable posters and handbills published at the offices of *The Medical Officer*.[6] The posters can be obtained, mounted on cloth and varnished, ready for display in tuberculosis dispensaries and elsewhere, or for exhibit in sanatoria, schools, and public buildings, etc. The cartoons provide graphic demonstration of the way in which tuberculosis is spread, and indicate ways for its prevention and arrest. The leaflets may well be distributed to school children after having been made the subject of a class lesson.

The National Association for the Prevention of Tuberculosis have recently issued the "Transactions of the Tenth Annual Conference"

[1] See article on the "Characteristics of the High Alpine Climate and Cure at Davos," by Dr. Edward C. Neumann in THE BRITISH JOURNAL OF TUBERCULOSIS, Vol. XVIII., No. 1, pp. 3-11, January. 1924.

[2] We are indebted to the courtesy of Mr. W. G. Lockett, H.B M. Consul at Davos, and editor of the *Davos Courier*, which is issued by the Davos Public Interest Association, for the loan of the block from which the accompanying illustration has been prepared.

[3] Copies of the tabular statement regarding Cost at Residential Institutions for the Treatment of Tuberculosis can be obtained on application to the Ministry of Health.

[4] Copies of the draft regulations which have been prepared for this purpose can be purchased under the description, "Draft dated 17th October, 1924, of the Public Health (Prevention of Tuberculosis) Regulations, 1924," from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2, either directly or through any bookseller (price 1d.).

[5] Copies of the publication above noted may be purchased (price 6d.) at the following addresses: Adastral House. Kingsway, W.C. 2; 28, Abingdon Street, S.W. 1; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 120, George Street, Edinburgh; or through any bookseller.

[6] Full particulars and specimen of the above-mentioned posters, etc, can be obtained on application to the offices of *The Medical Officer*, 36-38, Whitefriars Street, E.C. 4.

held last summer.[1] The work is of special interest and value as containing papers and the records of discussions relating to Training Colonies for Tuberculous Subjects and the organization of Care Committees.

Many doctors and patients are enthusiastic photographers. All such may be reminded that the "'Wellcome' Photographic Exposure Calculator, Handbook, and Diary" for 1925 is an indispensable pocket companion.[2] The current issue is of exceptional interest, providing, in addition to the customary much approved features, sections on the use of the "Tabloid" Desensitizer, and data regarding comparative speeds of development papers and lantern plates. There is also a form which, when filled in and posted to B.W. and Co.'s headquarters, entitles users of the handbook to free photographic advice and literature during the year.

We are glad to welcome *Sunlight*, the new, illustrated, informing, and generally attractive journal of the Sunlight League.[3] It claims to be "A Journal of Light and Truth," and very effectively sets forth the principles and services which are being so enthusiastically advocated by the body of which it is the official organ. There is a message from Mr. Lloyd George, articles by Sir Oliver Lodge, Dr. Leonard Hill, Dr. Saleeby, Mrs. Cloudesley Brereton, Miss Margaret McMillan, Lady Essex French, Mr. E. D. Simon, Miss Kate O'Brien, Mr. John Wakelin, and others. The editors declare in their opening sentence: "The purpose of this journal is to work for the restoration of the light of the sun to all who live in cities, and to affirm the principles and applications of light for health and in the prevention and cure of disease." We wish the Sunlight League and its excellent journal great success in its educational and philanthropic endeavours. Our readers should make a point of securing at once a copy of the first number of *Sunlight*.

The Shaftesbury Society has just issued a new edition of their helpful Cripple-Aid Handbook containing valuable suggestions and information for all interested in tuberculous cripple children in London.[4]

At the Royal Institute of Public Health, 37, Russell Square, W.C., the Harben Lectures will be delivered by Professor Edgar L. Collis, M.A., M.D., Mansel Talbot Professor of Preventive Medicine, University of Wales, on "Phthisis and Industrialism (National and Occupational) with Reference to other Infectious Diseases" at 4.30 p.m. on January 26, 27, and 28, 1925.

Messrs. Billing and Sons, Ltd., the well-known firm of printers at Guildford, have issued a useful form of Calendar for the recording of engagements.

[1] The National Association for the Prevention of Tuberculosis, 20, Hanover Square, London, W. 1: "Transactions of the Tenth Annual Conference" held in the Robert Barnes Hall (Royal Society of Medicine), 1, Wimpole Street, W. 1, on July 3 and 4, 1924. Pp. xxiii+76. London: Geo. Pulman and Sons, Ltd., Thayer Street, W. 1. 1924. Price 6s., post free.

[2] "The 'Wellcome' Photographic Exposure Calculator, Handbook, and Diary" for 1925. London: Burroughs Wellcome and Co., Snow Hill Buildings, E.C. 1. Price 1s. 6d. net.

[3] *Sunlight* (price 1s.) is published by the Sunlight League at their headquarters at 37, Russell Square, from whence full particulars regarding the League may be obtained.

[4] "Cripple-Aid Handbook," issued by the Shaftesbury Society. John Kirk House, 32, John Street, Theobald's Road, W.C. 1.